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THE
QUADRUPEDS AND REPTILES
OF EUROPE.

A GUIDE
TO THE
QUADRUPEDS AND REPTILES
OF EUROPE;

WITH DESCRIPTIONS OF ALL THE SPECIES.

COMPILED FROM THE LATEST WRITERS.

BY
LORD CLERMONT.
[Thomas Fortescue]



LONDON:
JOHN VAN VOORST, PATERNOSTER ROW.

MDCCCLIX.

“LO, THESE ARE PARTS OF HIS WAYS.”

Book of JOB.

PREFACE.

EXCEPTING the Birds, where the Manuals of Temminck and Degland leave nothing to be desired, there is no work of portable size in the English or French language on any division of European Vertebrates.

It was the want of some such guide which at first induced the Author to put together for his own information the descriptions of the Quadrupeds and Reptiles found in our own quarter of the globe, which form the present Work; and he trusts that the same want felt by others wishing to observe the animals of the countries which they visit in their Continental tours, will be found to justify its publication. The reader will kindly bear in mind that it is a mere compilation, intended to serve only until superseded by some more original work on the subject.

No pains have been spared to select the clearest accounts of the several species, those of the Reptiles being almost all from the great work of Duméril and Bibron. It is therefore hoped, that although, where the distinguishing characters are obscure, the traveller may not always be enabled to name his specimen at

once, he will at least find his doubts reduced to narrow limits, and by an easy process of exhaustion will speedily arrive at its identification.

The measurements, except where it is otherwise stated, are in English feet, inches, and lines, or twelfths of an inch. The letters F. M. denote old French measure, where 1 foot equals 1 foot 1 inch and $1\frac{1}{2}$ line English.

The boundaries of Europe on its Asiatic frontier here adopted are the Ural Mountains, the River Ural or Jaik, the Caspian Sea, and the Rivers Kouban and Terek, to the north of the Caucasus.

C.

London, May 1859.

WORKS QUOTED OR CONSULTED.

Europäische Fauna. Von Dr. Heinrich Schinz. 2 vols.
8vo. Stuttgart, 1840.

Quoted as Schinz, Europ. Faun.

Die Wirbelthiere Europa's. Von A. Graf Keyserling und
Professor J. H. Blasius. 1 vol. 8vo. Braunschweig,
1840.

Quoted as Keys. u. Blas. Wirbelth. Europ.

Monographies de Mammalogie. Par C. J. Temminck. 2
vols. 4to. Paris, 1827 (vol. 1); Leiden, 1835-1841
(vol. 2).

Quoted as Temm. Monog.

Waterhouse's Natural History of the Mammalia. Vol. 2.
London, 1848.

Etudes de Micromammalogie. Par Edm. De Selys-Long-
champs. Paris, 1839. 1 vol. 8vo.

Quoted as De Selys, Micromamm.

Mammalogie. Par M. A. G. Desmarest. 1 vol. 4to.
Paris, 1820.

Quoted as Desm. Mammal.

Fauna der Wirbelthiere Deutschlands. Von J. H. Blasius.
Erster Band, Säugethiere. Braunschweig, 1857. 8vo.

Quoted as Blasius, Wirbelth. Deutschl.

Erpétologie Générale. Par A. M. C. Duméril et G. Bibron.
Paris, 1834-54. 9 vols. 8vo.

Quoted as Dum. et Bib.

Iconografia della Fauna Italica. Di Carlo L. Principe Buonaparte. Roma, 1832-41. 3 vols. folio.

Quoted as Buon. Faun. Ital.

Zoographia Rosso-Asiatica. Auctore Petro Pallas. Petropoli, 1831. 3 vols. 4to.

Quoted as Zoog. Ross. As.

A Manual of British Vertebrate Animals. By the Rev. Leonard Jenyns. Cambridge, 1835. 1 vol. 8vo.

A History of British Quadrupeds. By Thomas Bell. London, 1837. 1 vol. 8vo.

Quoted as Bell, Brit. Quad.

A History of British Reptiles. By Thomas Bell. London, 1839. 1 vol. 8vo.

Quoted as Bell, Brit. Rep.

Faune Méridionale. Par J. Crespon. Nismes, 1844. 2 vols. 8vo.

Schlesien's Wirbelthier-Fauna. Von Dr. Constantin Lambert Gloger. Breslau, 1833. 1 vol. 8vo.

Verzeichniss der in der Schweiz vorkommenden Wirbelthiere. Von Professor H. R. Schinz. Neuchatel, 1837. 1 vol. 4to.; forming part of 'Fauna Helvetica.'

Fauna der Galizisch-bukowinischen Wirbelthiere. Von Dr. Alexander Zawadski. Stuttgart, 1840. 1 vol. 8vo.

Fauna der in Krain bekannten Säugethiere, Vögel, Reptilien, und Fische. Von Heinrich Freyer. Laibach, 1842. 1 vol. 8vo.

Faune Belge. 1 Partie. Par Edm. De Selys-Longchamps. Liège, 1842. 1 vol. 8vo.

The Naturalist's Library. Edited by Sir William Jardine. 40 vols. 8vo.

British Museum Catalogues.

THE
QUADRUPEDS AND REPTILES
OF EUROPE.

Class MAMMALIA.

VERTEBRATE animals, with warm blood ; viviparous, and suckling their young ; breathing by lungs ; the body generally covered with hair, and provided, except in the Cetacea, with four feet.

Order QUADRUMANA.

Teeth of three kinds ; both fore and hinder extremities provided with a thumb ; teats pectoral.

Genus **MACACUS.**

Teeth.—Incisors, $\frac{4}{4}$; canines, $\frac{1-1}{1-1}$; molars, $\frac{5-5}{5-5}$.

First and second molars with two tubercles, the others with four, except the last in the lower jaw, which has five ; eyes approaching ; cheek-pouches ; callosities on the buttocks ; tail more or less developed, or replaced by a simple tubercle ; two pectoral teats.

Macacus Inuus.

Inuus sylvanus, Cuv. Règ. Anim.

Macacus Inuus, DESM. Mamm. Sp. 37.

Barbary Ape.

DESCRIPTION.—Head large; nose very flat; eyes small, deeply buried; hairs of the cheeks directed backwards, forming thick whiskers; ears naked, with hairs at the points; neck short; cheek-pouches very large; thumbs of the feet large, those of the hands small. Fur on the top and sides of the head, on the cheeks and shoulders, rather bright golden-yellow, mixed with some black hairs, each hair dark grey at its base, the rest ringed with yellow and grey. The rest of the upper parts of the body of a much darker greyish yellow, with transverse blackish bands; all the under parts greyish yellow; face naked, of a livid flesh colour; tail a simple tubercle. Females smaller than the males, with canine teeth scarcely longer than the incisors.

Length of the body, 1 foot 7 inches 9 lines; of the head, 7 inches.

This is the only species of the Monkey-tribe found in Europe, and the Rock of Gibraltar is its single European habitat. Is found in Egypt and Barbary.

Order CHEIROPTERA. BATS.

Provided with membranous wings; teats pectoral; teeth of three kinds.

Genus DYSOPES.

Teeth.—Incisors, $\frac{2}{2}$; canines, $\frac{1-1}{1-1}$; molars, $\frac{4-4}{5-5}$.

Number of incisors varying according to the age, being greater in the young than the adult, viz. $\frac{2}{0}$, $\frac{2}{2}$, $\frac{2}{4}$ or $\frac{2}{6}$ (sometimes $\frac{4}{6}$ in the very young). Head large; nose without

follicles; ears wide and short, beginning near the angle of the lips, projecting over the eyes; tail long, projecting beyond the membrane for a large portion of its length.

The size of the head, and the wide muzzle, supposed to resemble that of a mastiff, have given rise to the name *Molossus*, adopted by some authors.

Dysopes Rüppelii.

Molossus Cestonii, GEOFFROY.

Dysopes Cestonii, BUON. Faun. Ital. (figured).

Dysopes Rüppelii, TEMM. Monog. (figured).

DESCRIPTION.—In size resembling *Vespertilio murinus*. Ears very large, overhanging the face, apparently wider than long, slightly margined on the outside, with seven or eight very small fleshy points on the inner part of the anterior margin, not united, but arising from a common base on the forehead; tragus double, being in part outside and in front of the ear; tail as long as the body, thick, depressed, more than half its length projecting beyond the membrane; toes covered with whitish silky hairs. Fur thick, fine, close, and smooth, a wide border of close hairs on each side of the wings, close to and along the body; snout covered with scattered black hairs; lips wide, pendent, and folded; upper parts of the body of a uniform mouse-colour throughout, lower parts a little lighter; hairs on the fingers long; wings very narrow, but of great extent; the two upper incisors wide apart, the four or six lower ones crowded, with the two middle pressed forward; in the upper jaw a very small tooth between the canine and first false molar.

Entire length, 5 inches 2 to 6 lines, of which the tail alone occupies 2 inches; fore-arm, 2 inches 2 lines; extent of wing in the male, 14 inches 6 lines; in the female, 13 inches.—F. M.

Lives in caves and old buildings.

First discovered in Egypt by Rüppel; has been found in several parts of Italy, the Maremma of Sienna, Pisa, Rome, and in Sicily. The Prince of Musignano thinks that this Bat will be found to exist in most parts of the Italian peninsula.

Genus **RHINOLOPHUS.**

Teeth.—Incisors, $\frac{2}{4}$; canines, $\frac{1-1}{1-1}$; molars, $\frac{5-5}{5-5}$.

Nostrils with two follicles, the hinder one erect; ears free; tragus wanting.

Rhinolophus ferrum-equinum.

Rhinolophus unihastatus, DESM. Mamm. Sp. 184.

Rhinolophus ferrum-equinum, BELL, Brit. Quad.; BUON. Faun. Ital. (figured).

Great Horseshoe Bat.

DESCRIPTION.—Upper incisors very small, separated from each other; lower incisors each with three lobes; ears nearly as long as the head, somewhat triangular, broad at the base, ending in an acute point; the external margin notched at the base, and forming an elevated round lobe, which guards the orifice, and appears to act the part of tragus, which is wanting; nostrils placed at the bottom of a cavity, close to each other, surrounded by a naked membrane in the shape of a horseshoe arising from the upper lip; anterior follicle rising vertically immediately behind the nostrils, of a somewhat pyramidal form, sinuous at the margins and apex, which last is obliquely truncated; the posterior placed on the forehead, transversely to the anterior, and more erect, lanceolate, expanding laterally at the base, in front of which are two small, cup-shaped cavities formed by a fold of the skin. Colour of the fur reddish ash, inclining to grey beneath; membranes dusky; ears within and without slightly hairy.

Length of head and body, 2 inches 5 lines; head, $11\frac{1}{2}$ lines; tail, 1 inch $2\frac{1}{2}$ lines; ears, 9 lines; breadth of the ears, 6 lines; length of thumb, $2\frac{1}{2}$ lines; extent of wings, 13 inches.

Rare in England, though it has been observed in several localities. Is met with in France, and is not uncommon in the south of that country. Occurs in Belgium in the quarries of Maestricht. In Italy, said by the Prince of Musignano to be very common in almost every cavern, old building, and rotten tree; is found in St. Peter's, Rome. Also in Carniola and Dalmatia, many parts of the chain of the Alps, and of Germany south of the Hartz. In Hungary and the South of Russia.

Rhinolophus bihastatus.

Rhinolophus bihastatus, DESM. Mamm. Sp. 185.

Rhinolophus Hipposideros, BELL, Brit. Quad.

Rhinolophus Hippocrepis, BUON. Faun. Ital. (figured).

Lesser Horseshoe Bat.

DESCRIPTION.—Principally distinguished from the last species by its very inferior size; the anterior appendage is less obliquely truncated at the apex, and the posterior one narrower at the base, and without the lateral expansions; the ears more deeply notched, and the external margin more sinuous. Fur soft, rather long; pale rufous brown above, greyish ash beneath with a tinge of yellow.

Length of head and body, 1 inch 4 lines; head, 8 inches; tail, 9 lines; ears, 5 lines; breadth of ears, $4\frac{1}{2}$ lines; length of thumb, 2 lines; extent of wings, 8 inches 4 lines.

In England even rarer than the last; sometimes found along with it. In France it is rare in the south (Crespon). De Selys gives it as occurring at Maestricht with the last species.

Inhabits many parts of Germany, the Alps, Hungary, Dalmatia, Istria, and the South of Russia.

Rhinolophus Euryale, Blasius.

Rhinolophus Euryale, BLASIUS, Wirbelth. Deutschlands.

Die rundkammige Hufeisennase, BLASIUS, l. c.

DESCRIPTION.—This species, discovered by Professor Blasius in Lombardy in 1847, very closely resembles the following in general appearance, size, colour, and habits, as well as in its geographical distribution. The teeth are 32 in number, and are said to differ in several minute particulars from those of *R. clivosus*, but only in those specimens where they are not worn by use. The shape of the nasal follicle also differs; but I am obliged to confess that the translations from the article of that learned naturalist's work which I have made myself and obtained from others, fail to convey a distinct idea on that point. His figure of the follicle of *R. clivosus* shows two small teeth in the centre of the outer margin of the horseshoe, which are wanting in the figure of the present species. The ears are longer in proportion, reaching considerably beyond the snout when pressed to the head, whereas in *R. clivosus* they only just reach it. The tail is also longer.

Entire length, 2 inches 7 lines; tail, 1 inch; extent of wing, $10\frac{1}{2}$ inches.

The general colour of the fur is light whitish below, darker above, and shaded with a smoke-brown tinge.

It is found only south of the Alps, occurring near Milan and the Lago di Garda, at Trieste, and Spolatro in Dalmatia.

Rhinolophus clivosus.

Rhinolophus clivosus, TEMM. Monog. vol. ii. p. 33; BUON. Faun. Ital. (head figured).

Die spitzkammige Hufeisennase, BLASIUS, Wirbelth. Deutschlands.

DESCRIPTION.—Tail one-third the length of the fore-arm, much longer than the tibia; ears large, pointed, channeled

with five folds, inferior lobe very large, covered with hairs, completely closing the ears, and distinguishing the species from the two former; follicle simple, spear-shaped, but slightly elevated, and furnished with hairs, but with the base quite naked, grooved, rising from the centre of the horseshoe; a single wart on the edge of the lower lip. Fur long, very thick, covering the wing-membranes above and below; hairs of the upper parts whitish at base, ashy at their tips, with a vinous tint; lower parts whitish, with a slight tinge of vinous; all the membranes blackish. Upper incisors very minute and far apart; four lower incisors crowded, all three-lobed; molars four above, five below on each side.

Total length, 3 inches, of which the tail occupies 1 inch 2 lines; fore-arm, 1 inch 9 lines; extent of wing, 10 inches in dried specimens, 11 or 12 inches in fresh ones.—F. M.

Has been found in Dalmatia and in the Levant; its principal abode is Africa, where it occurs both in Egypt and at the Cape of Good Hope. Professor Blasius, however, has met with it in Istria, Northern and Central Italy, and Sicily.

Genus **VESPERTILIO.**

Teeth.—Incisors, $\frac{4}{6}$; canines, $\frac{1-1}{1-1}$; false molars varying in number; true molars always $\frac{3-3}{3-3}$.

Nostrils without follicles; ears free, or united at their bases; tragus always present.

This genus has been subdivided as follows:—

Subgenus 1. VESPERTILIO.—Grinders 4 to 6 above, and from 3 to 6 below, on each side; ears moderately large, lateral, separate.

Subgenus 2. PLECOTUS.—Grinders 5 above, 6 below, on each side; ears very large, much longer than the head, with their inner edges united at the base above the eyes.

Subgenus 3. BARBASTELLUS.—Grinders 4 above, 4 below, on each side; ears moderate, united at the base above the eyes; a flat naked space on the forehead, surrounded by a membranous edge.

Subgenus 1. VESPERTILIO.

Vespertilio Noctula.

Vespertilio Noctula, DESM. Mamm. Sp. 204; BELL, Brit. Quad.; TEMM. Monog. vol. ii. p. 169; BUON. Faun. Ital. (figured).

DESCRIPTION.—Two false molars on each side, above and below. Head very broad; muzzle short and thick in adults, somewhat elongated in the young; nostrils tumid at the edges, slightly bilobate; forehead very hairy, rest of the face almost naked; ears shorter than the head, somewhat triangular, rounded at the extremity, the posterior margin folded back with a projecting ridge internally, and a small protuberance at the base, which extends round nearly to the corners of the mouth; tragus very small, ending above in a broad round head. Fur rather short, but soft and thick, of a uniform reddish brown above and below; membranes dusky, with a ridge of hair along the bones of the arm. Tail shorter than the fore-arm, reaching $1\frac{1}{4}$ line beyond the membrane.

Length of head and body, 2 inches 11 lines; head, 10 lines; tail, 1 inch 8 lines; ears, $7\frac{1}{2}$ lines; tragus, $2\frac{1}{2}$ lines; breadth of ears, 6 lines; of tragus, $1\frac{1}{2}$ line; length of the fore-arm, 2 inches; of the thumb, $2\frac{1}{2}$ lines; extent of wings, 14 inches.

Is found in almost every country of Europe. Rare in England and in France. More common in Germany. Pallas describes it as met with everywhere in Russia, but in greatest plenty on the shores of the Caspian, where it feeds on the gnats which abound there: common in the

Crimea and in Carniola. In Belgium, according to M. de Selys Longchamps, it is common everywhere.

Vespertilio murinus.

Vespertilio murinus, DESM. Mamm. Sp. 200; BELL, Brit. Quad.

Vespertilio myotis, TEMM. Monog. vol. ii. p. 177; BUON. Faun. Ital. (figured).

La Chauve Souris, BUFFON.

DESCRIPTION.—False molars $\frac{3-3}{3-3}$. Face almost naked; forehead very hairy; eyes rather large, with a few dusky hairs immediately above them; ears inclining backwards, as long as the head, oval, naked, greyish-ash colour externally, yellowish within; tragus falciform, about half the length of the auricle. Fur pale reddish brown above, beneath dirty white, inclining to yellowish; wings brownish.

Length of head and body, 3 inches 5 lines; head, 11 lines; tail, 1 inch 8 lines; ears, $11\frac{1}{2}$ lines; tragus, 5 lines; thumb, 5 lines; extent of wings, 15 inches.

Flies very late in the evening.

Is very rare in Britain, although it is one of the commonest Bats in France and Germany; is less abundant in Italy. In Russia, Pallas gives it as not uncommon in the more southern parts, especially in the country of the Cossacks of the Ural, and in the Crimea. It is probably distributed over the whole, or nearly the whole of Europe.

Vespertilio Bechsteinii.

Vespertilio Bechsteinei, DESM. Mamm. Sp. 201; BELL, Brit. Quad.; TEMM. Monog. vol. ii. p. 184.

DESCRIPTION.—Three false molars on each side. Allied to *V. murinus*, but distinguished by its smaller size, relatively longer ears, and very slender thumb. Face almost naked; muzzle long and conical; ears oval, somewhat longer than

the head, rounded at the ends; tragus lanceolate, pointed. Fur reddish grey on the upper parts, whitish on the under.

Length of head and body, 2 inches 1 line; head, 9 lines; tail, 1 inch 3 lines; ears, 10 lines; tragus, 4 lines; thumb, 4 lines; extent of wings, 11 inches.

This Bat is said to live in hollow trees, and never to approach towns.

Rare in England, a few specimens having occurred in the New Forest only: "is found in parts of Germany, and is not uncommon in Thuringia." Has been observed in France, in the Department of the Moselle, by Holandre. Is found in Denmark. Blasius has met with it in Hungary, Galicia, and the Ukraine; often with *V. Daubentonii* and *V. Nattereri*.

Vespertilio Nattereri.

Vespertilio Nattereri, DESM. Mamm. Sp. 202; BELL, Brit. Quad.; TEMM. Monog. vol. ii. p. 185.

DESCRIPTION.—False molars $\frac{3-3}{3-3}$. Head rather small; snout attenuated; nose a line in breadth at the end, slightly emarginated between the nostrils, convex above; all the face, except immediately above the nose, hairy; hairs thinly scattered about the eyes and chin, with a few bristly ones, longer than the others, intermixed; gape extending as far as posterior angle of the eye; a row of longish hairs on the upper lip forming a moustache; a prominent sebaceous gland on each side above the lip; ears oblong-oval, as long as the head, rather more than half as broad as they are long; the extreme inner margin reflexed, the outer margin scarcely notched, extending downwards and forwards to meet the inner margin at the base; tragus two-thirds as long as the auricle, very narrow, lanceolate, thin, and naked; eyes very small; flying membrane naked, semi-

transparent, a spur or tendinous process running from the heel along the margin of the interfemoral membrane, and tending to stretch it; margin between spur and tail puckered and set with short bristly hairs; free portion of tail very short; hinder claws very strong, with long hairs; thumb smaller than in *V. Bechsteinii*. Fur long and silky, light rufous brown approaching to reddish grey above, the tips of the hairs being of this colour, the roots dusky brown; beneath, silvery grey at tips, black towards the roots; ears yellowish grey, especially within, towards the base; tragus yellowish; interfemoral membrane paler than wings. Female more reddish above than male. The general colour of this Bat is lighter than that of most others.

Length of head and body, 1 inch 11 lines; head, $8\frac{1}{2}$ lines; tail, 1 inch 7 lines; ears, $8\frac{1}{2}$ lines; tragus, 5 lines; breadth of ears, $3\frac{3}{4}$ lines; tragus at base, 1 line; length of forearm, 1 inch 6 lines; thumb, $2\frac{3}{4}$ lines; extent of wings, 10 inches 8 lines.

Very local in England and Ireland. In Belgium, M. de Selys Longchamps has found it in the quarries of Maestricht and near Brussels. M. Holandre has obtained it near Metz in hollow trees. Professor Blasius, in several parts of Germany, in Hungary, Galicia, and Central Russia.

Vespertilio serotinus.

Vespertilio serotinus, DESM. Mamm. Sp. 205; BELL, Brit. Quad.; TEMM. Monog. vol. ii. p. 175; BUON. Faun. Ital. (figured).

DESCRIPTION.—False molars $\frac{1-1}{2-2}$. Face almost naked; muzzle very short, broad, and obtuse; ears oval-triangular, shorter than the head, hairy outside at base, naked above; tragus semicordate, somewhat elongated, pointed. Fur in the male, deep chestnut-brown above, passing beneath into yellowish grey; in the female, much brighter; hair long,

glossy, and soft. In the young the head is said to be rounder and thicker, the muzzle shorter and blunter; lip very tumid, and the colour more obscure than in the adult.

Length of head and body, 2 inches 7 lines; head, 10 lines; tail, 1 inch 10 lines; ears, 8 lines; tragus, 3 lines; thumb, 3 lines; extent of wing, 12 inches 6 lines.

Frequents trees; is solitary in its habits; appears late in spring.

In England has been found near London only; not uncommon in France and Belgium. Is found in the stacks of firewood in Paris. Common in Germany and Holland, Denmark, Galicia, Silesia, and Carniola. Frequent near Rome, and in the gallery of Albano. In Russia, Pallas has found it in caverns near Tarei-noor, and not uncommonly in the Crimea. It may therefore be said to extend over nearly the whole of the European Continent.

Vespertilio Leisleri.

Vespertilio Leisleri, DESM. Mamm. Sp. 206; BELL, Brit. Quad.

Vesperugo Leisleri, BLASIUS, Wirbelth. Deutschl.

DESCRIPTION.—Nearly allied to *V. Noctula*. False molars $\frac{2-2}{2-2}$; muzzle rather more elongated than in *V. Noctula*; nose depressed, naked; region of the eyes also naked; ears hairy inside, oval-triangular, shorter than the head, broad, the outer basal margin advancing to nearly the corners of the mouth; tragus half the length of the ear, ending in a rounded head, which is slightly curved inwards, and produced on its outer margin, much resembling the same part in *V. Noctula*; nostrils crescent-shaped; a large sebaceous gland above the gape; a band of short hair, about four lines in breadth, extends along the lower surface of the fore-arm to the wrist, where it is thickest and most extended. Fur long; above, the hair is deep brown

at base, bright chestnut at the surface; beneath, dusky at the base, dark greyish brown at the surface. Wings dusky, parts near the body very hairy above and below; thumb short and feeble; colour said to be much darker in the young.

Length of head and body, 2 inches 2 lines; head, $7\frac{1}{2}$ lines; tail, 1 inch 8 lines; ears, 5 lines; tragus, $2\frac{1}{2}$ lines; breadth of ears, 4 lines; of tragus, $1\frac{1}{4}$ line; length of the fore-arm, 1 inch $6\frac{1}{2}$ lines; thumb, $1\frac{3}{4}$ line; extent of wings, 11 inches.

It is said to frequent hollow trees, congregating in vast numbers; is fond of the neighbourhood of stagnant waters.

In England only one specimen is known to have been taken, and the only other habitat given by Desmarest is Germany, near Willens, where it was discovered by Leisler; but Blasius asserts that he has seen it in the east of France, in several places in South Germany, all along the Alpine chain, in Hungary, and Central Russia.

Vespertilio Schreibersii.

Vespertilio Schreibersii, DESM. Mamm. Sp. 207; TEMM. Monog. vol. ii. p. 174.

Vespertilio Ursinii, BUON. Faun. Ital. (figured).

DESCRIPTION.—Upper incisors very small, with a large space between the pairs, and another space between the incisors and canines; second upper molar nearly as long and as sharp as the canines; head small; upper lip swollen, furnished with some silky hairs; muzzle thick, 1 line in width; gape not reaching as far as the ears, which are small, shorter than the head, triangular, rounded at the angles, with a velvety border internally; tragus lanceolate, bent inwards towards the point. Fur ashy grey, paler above, and often mixed with yellowish white.

Length of head and body, 2 inches $7\frac{1}{2}$ lines; head $5\frac{1}{2}$

lines ; tail, 1 inch $8\frac{1}{2}$ lines ; ears, $4\frac{1}{2}$ lines ; breadth of ears, 4 lines ; length of tragus, 2 lines ; of thumb, $2\frac{1}{3}$ lines ; extent of wings, from 10 to 11 inches.—F. M.

Discovered in caves in the Bannat of Hungary by Schreibers ; has been found in parts of Germany, and in the Bukovina, Istria, Dalmatia, and South Italy. In France, Crespon (Faune Méridionale) mentions it as occurring in the Department du Gard.

Vespertilio discolor.

Vespertilio discolor, DESM. Mamm. Sp. 208 ; BELL, Brit. Quad. ; TEMM. Monog. vol. ii. p. 173.

DESCRIPTION.—False molars $\frac{2-2}{2-2}$; forehead broad and hairy ; muzzle long, and very broad ; nose thick and blunt, measuring $1\frac{2}{3}$ line across the end ; eyes very small ; ears shorter than the head, rounded, oval, bending outwards, and reaching almost to the corners of the mouth, with a projecting lobe near the base of the inner margin, clothed at base outside with thick woolly hair ; tragus short, of nearly equal breadth throughout ; tail reaching 3 lines beyond the membrane. Fur on the back reddish brown, with the extreme tips of the hairs white, causing a marbled appearance ; beneath, dirty white, with a large patch of somewhat darker tint covering the breast and abdomen ; throat pure white.

Length of head and body, 2 inches 4 lines ; of head, 9 lines ; tail, 1 inch 5 lines ; ears, $6\frac{1}{2}$ lines ; tragus, $2\frac{1}{4}$ lines ; thumb, 3 lines ; extent of wing, 10 inches 6 lines.

Said to live only in buildings.

Only one individual has been found in England. Discovered in South Germany by Natterer ; rare at Vienna ; not uncommon in Silesia, Denmark, and the Bukovina. In many parts of the Alpine chain, Dalmatia, Hungary, and the eastern parts of France.

Vespertilio Pipistrellus.

Vespertilio Pipistrellus, DESM. Mamm. Sp. 209; BELL, Brit. Quad.;
TEMM. Monog. vol. ii. p. 194.

Common Bat of the British Islands.

DESCRIPTION.—Much resembles *V. Noctula*, but smaller. False molars $\frac{2-2}{2-2}$; head depressed in front, convex behind; muzzle short in adults, somewhat longer in the young; nose blunt, and slightly emarginate between the nostrils, a swelling upon the upper lip on each side; eyes very small, above each a wart, with a few black hairs; ears broad, oval-triangular, rather more than half as long as the head, with their outer margins deeply notched half-way down; tragus half the length of the ear, nearly straight, oblong, with a rounded head; tail as long as the fore-arm. Fur rather long and silky, yellowish red on the forehead and base of the ears; upper parts reddish brown, with the lower half of each hair dusky; under parts wholly dusky, except the tips of the hairs, which are like those of the upper parts, but rather paler: the young are brownish grey or black, without any tinge of red; nose, ears, lips, and membranes dusky.

Length of head and body, 1 inch 7 lines; head, 6 lines; tail, 1 inch 2 lines; ears, 4 lines; tragus, 2 lines; breadth of ears, 3 lines; of tragus, $\frac{3}{4}$ ths of a line; length of fore-arm, 1 inch 2 lines; thumb, $1\frac{3}{4}$ line; extent of wing, 8 inches 4 lines.

Collects in large numbers in old walls and under roofs; is first seen in the beginning of March in England, where, as in the British Islands generally, it is the commonest species. Is also frequently met with in France and Belgium. Is not found in Italy, according to the Prince of Musignano, who says that it is represented there by the *V. Vispistrellus*, a very closely allied species. Desmarest,

not recognizing this distinction, says that the *Pipistrelle* is a native of Italy; and Blasius, of Sicily. It is very common in Germany and Silesia. Pallas records it as abundant in the Ural Mountains, and in the Crimea. In Denmark, Gallicia, and Carniola. Is probably the most common species of Central Europe generally.

Vespertilio Vispistrellus.

Vespertilio Vispistrellus, TEMM. Monog. vol. ii. p. 193; BUON. Faun. Ital. (figured).

Vesperugo Kuhlii, BLASIUS, Wirbelth. Deutschl.

DESCRIPTION.—Closely allied to *V. Pipistrellus*, but differing from it in size, being about one-sixth larger; by the absence of false molars in the upper jaw, and by a slight difference in the colour of the fur, which is somewhat reddish. The space from the nose to the ear is one-fourth greater than that between the ears; the nose blunt; eyes near the ears, which are two-thirds of the length of the head, oval-triangular, rounded at the ends, and slightly margined near the middle; tragus narrow, bent, and of the same width throughout; space round the eyes and the end of the nose naked; tail scarcely longer than the forearm, entirely within the membrane, which is ample, furnished with a small lobe on its outer edge near the feet, with a few scattered hairs upon its inner surface, and more or less edged with white. Fur long and silky; hairs above brown at base, ashy red at their tips; hairs on the forehead and at the base of the ears yellowish at their tips. Fur on the under parts of the body brownish, the hairs being bright red-brown at their tips.

Length of head and body, 1 inch 9 lines; tail, 1 inch 6 lines; fore-arm, 1 inch 3 lines; extent of wing, 8 inches 6 lines.—F. M.

Inhabits the southern parts of Europe. Is the com-

monest Bat in Tuscany and near Rome. Is found in Sicily.

Vespertilio Kuhlii.

Vespertilio Kuhlii, TEMM. Monog. vol. ii. p. 196 ; DESM. Mamm. Sp. 212.

DESCRIPTION.—Incisors very unequal in size, those next the canines extremely small. Upper molars five in number, of which one false molar is scarcely visible, being hidden between the molars and canines, and falls out in adults. In size a little smaller than *V. Pipistrellus*, for which it may be easily mistaken. Head wide; muzzle blunt; a tuft of stiff hairs over the eyes; ears completely triangular, neither notched nor lobed on the outer margin, wide at base; tragus wide, rounded at the end, bending a little towards the head; skin black; wing-membranes and upper half of interfemoral hairy, the latter with a small lobe. Fur of two colours throughout; more abundant and rather longer than in *V. Pipistrellus*, a wide belt of greyish hairs running along the flanks and over the lower part of the back. Fur above reddish brown, the base of the hairs being blackish; on the under parts the fur is lighter than in the *Pipistrelle*; membranes very smooth, quite black; a few bristly hairs on the thumb and toes. Distinguished from the last-named species by the shape of the ear and tragus, the greyish belt of hair along the sides, and, above all, by the decidedly hairy character of the interfemoral membrane.

Length of head and body, 1 inch 9 lines; tail, 1 inch 3 lines; fore-arm, 1 inch 3 lines; extent of wings, 8 inches 4 to 8 lines in adults; only 7 inches 6 lines in the young of the year.—F. M.

Found in Dalmatia, Carniola, and the South of Italy. A few have been taken at Trieste by M. Natterer.

Vespertilio mystacinus.

Vespertilio mystacinus, DESM. Mamm. Sp. 211 ; TEMM. Monog. vol. ii. p. 191 ; BELL, Brit. Quad. ; BLASIUS, Wirbelth. Deutschlands, p. 96.

Vespertilio humeralis, TEMM. Monog. vol. ii. p. 192.

Whiskered Bat.

DESCRIPTION.—False molars $\frac{6}{6}$. Head small and flattish ; muzzle short ; nose swollen, with a shallow cleft in the middle ; face hairy, and a few scattered hairs on the nose and chin longer than the rest ; a row of fine, soft, close-set hairs on the upper lip, forming a conspicuous moustache, a similar row crossing the forehead ; ears shorter than the head, moderately broad, oblong, rounded at the extremities, rather deeply notched on their outer margins ; tragus rather more than half the length of the ear, lanceolate, perfectly straight, narrowing regularly from the base to the tip, which is sharply pointed ; tail longer than the fore-arm, projecting 1 line beyond the membrane. Fur very long, thick and woolly, dusky, approaching to black, except the extreme tips, which are reddish, brown on the upper parts, and ash-grey beneath ; interfemoral membrane sometimes marked on its inner surface with numerous white ciliated lines.

Length of head and body, 1 inch 8 lines ; head, $7\frac{1}{2}$ lines ; tail, 1 inch 5 lines ; ears, $5\frac{1}{2}$ lines ; tragus, 3 lines ; breadth of ears, $3\frac{1}{2}$ lines ; tragus at base, 1 line ; length of fore-arm, 1 inch 3 lines ; thumb, $2\frac{1}{2}$ lines ; extent of wing, 8 inches 6 lines.

Flies low and swiftly ; retires late in the season to trees, houses, or caverns ; frequents the neighbourhood of water.

Very rare and local in England. In France occurs in the South-eastern Departments. Is common in almost every part of Belgium. In Germany, where it was discovered, is generally rare ; but is given in Gloger's Cata-

logue of Silesian Bats as of not infrequent occurrence in that province, in towns, and in outhouses in the country. Rare in the Bukovina and Silesia. Blasius finds it in the Alps, Hungary, and the central parts of Russia. Has been met with in Denmark.

Vespertilio limnophilus.

Vespertilio limnophilus, TEMM. Monog. vol. ii. p. 176 ; SCHINZ, Europ. Faun. i. p. 12.

Vespertilio dasycneme, BLASIUS, Wirbelth. Deutschl.

DESCRIPTION.—False molars $\frac{4}{4}$; second upper false molar hardly visible. Muzzle very short, wide, and blunt, almost entirely hairy, each lip furnished with long diverging bristles or stiff hairs ; ears moderate, perfectly oval, without any lobe or prolongation in front ; tragus short, straight, wide, rounded at tip ; tail short, the tip free ; wing-membrane springing from the upper joint of the metatarsus, *thus leaving the foot wholly free* ; glands of the face large, bright yellow, placed over the eyes on each side of the forehead. Fur soft, silky, of medium length ; upper parts of the body and the greater part of the sides of the neck deep mouse-colour in the male, rather reddish in the female ; the hairs on the parts beneath, the chin, cheeks, and front of the neck, white at the tips, black for the rest of their length, the white tip more or less extended according to age ; abdomen pure white ; at the insertion of the wings there is an ashy-brown tint. The young of the year are thinly clothed ; fur above dull brown, beneath bluish black, with the tips of the hairs grey ; abdomen whitish ; on several parts of the membranes there are stiff hairs of a pure white.

Length of head and body, 2 inches 6 lines ; tail, 1 inch 6 lines ; fore-arm, 1 inch 7 lines ; extent of wing, 11 inches in adult ; 9 inches in the young of the year.—F. M.

Flies only late at night, and very swiftly. Frequents the

neighbourhood of water, flying low over its surface, and over reedy places and low woods.

Is common in Holland, especially near Leyden. Has been found in Belgium by M. de Selys, near Maestricht, and at Faulx les Caves. Stated by Eversmann, in the 'Bulletin Soc. Imp. des Naturalistes de Moscou,' 1853, to occur on the River Ural, and on the Southern Volga. Blasius has ascertained its existence in Denmark, Brunswick, Oldenburg, Silesia, Hungary, and Italy.

Vespertilio Daubentonii.

Vespertilio Daubentonii, DESM. Mamm. Sp. 213; TEMM. Monog. vol. ii. p. 156; BELL, Brit. Quad.; BUON. Faun. Ital. (figured).

DESCRIPTION.—False molars $\frac{6}{6}$. Head rather small; muzzle blunt, with numerous long stiffish hairs, and a moustache of soft and long hair on each side of the upper lip, which is tumid; ears moderate, three-fourths of the length of the head, oval, bending a little outwards, the external margin very slightly notched, the inner margin with a fold near the base; tragus somewhat lanceolate, narrow, rather blunt at the apex, turned a little inwards, half as long as the ear; tail a little longer than the fore-arm, free for about 1 line. Hinder limbs robust; feet strong, the outer toe very distinct from the rest; interfemoral membrane ample, the transverse lines very numerous. Fur soft, plentiful, brownish black at the base; near the surface above greyish red, beneath ash-grey. Females and young rather darker; membranes dusky, with a reddish tinge; interfemoral membrane whitish beneath.

Length of head and body, 2 inches; head, 7 lines; tail, 1 inch 6 lines; ear, 6 lines; breadth of ear, $3\frac{1}{2}$ lines; length of tragus, $2\frac{1}{2}$ lines; fore-arm, 1 inch 4 lines; extent of wings, 9 inches.

Flies over the surface of water, in a swift irregular flight.

Is very rare in England. Has occurred in Denmark. Found in various parts of Germany, in Sweden, Finland, Dalmatia, Central Russia, Silesia, Gallicia, the Carpathians, Carniola, and Belgium. Is very common in Sicily, and has been observed in Sardinia; but, according to Prince Buonaparte, is not known in continental Italy.

Vespertilio Capaccini.

Vespertilio Capaccini, BUON. Faun. Ital. (figured); TEMM. Monog. vol. ii. p. 187.

DESCRIPTION.—Tragus more slender than in *V. emarginatus*; thumb large and strong; feet robust; head thick; muzzle conical, blunt; eyes about three times as near the ears as the end of the nostrils; gape extending only to the outer edge of the eye; ears scarcely two-thirds of the length of the head, one and a half times longer than broad, oval-lanceolate, without any notch, but only a slight curve on the outside near the base; tragus straight, pointed and filiform, not half as long as the auricle; the end of the muzzle and the lips furnished with scattered hairs, which are more numerous on the forehead and between the eyes; a large gland under the chin; the interfemoral membrane is cut away obliquely from the tail; the feet are entirely free both from that and the membranes of the wings, projecting in an unusual degree; the interfemoral membrane clothed for half its length from the base, both above and below, with long hairs; similar hairs along the flanks on both sides of the wing; toes furnished with white hairs and with long white nails; teeth very small. Fur soft, thick, of a bright cinnamon colour, the hairs of the upper parts grey at base; under parts yellowish red, the hairs at base being chestnut-brown; ears and membranes reddish brown; wings, when applied to the body, reach a little beyond the nose.

Length of head and body, 1 inch 8 lines; tail, 1 inch 6 lines; fore-arm, 1 inch 6 lines; extent of wings, 10 inches.—F. M.

This species is readily distinguished by the large size of the thumb, the robust character of the feet, and their extension beyond the hairy and narrow interfemoral membrane.

First described by the Prince of Musignano, who obtained it from Sicily. Professor Blasius possesses specimens from the Bannat in Hungary.

Vespertilio megapodius.

Vespertilio megapodius, TEMM. Monog. vol. ii. p. 189.

DESCRIPTION.—False molars $\frac{4}{4}$; upper incisors strong and large. Very like *V. Capaccini*. Muzzle very short and blunt; ears moderate, slightly notched; tragus long, leaf-shaped; interfemoral short, covered above and below with stiff scattered hairs; point of tail free; claws long, with a few stiff hairs. Fur short, smooth, of two colours, covering the flanks above and below; upper parts greyish brown, the base of the hairs dark brown; lower parts dull white, with the base of the hairs blackish; membranes brown.

Length of head and body all but 2 inches; of tail, 1 inch; fore-arm, 1 inch 5 lines; extent of wings in adults, 9 inches. Young of the year, blackish brown above, white below, with an extent of wing of 5 inches 6 lines; length of fore-arm, 1 inch.—F. M.

As in *V. Capaccini*, the feet are entirely free from above the heel, the membranes springing from the extremity of the tibia. Differs from that species in its muzzle being much shorter than the space between the ears, whereas in *V. Capaccini* the space between the ears is equal to the distance from the ears to the end of the nose, in having one false molar more, and in the skull being shorter.

Obtained in Sardinia by Monsieur Cantraine.

Vespertilio emarginatus.

Vespertilio emarginatus, DESM. Mamm. Sp. 210; TEMM. Monog. vol. ii. p. 190; BELL, Brit. Quad.; BUON. Faun. Ital. (figured).

DESCRIPTION.—False molars $\frac{6}{6}$. In shape and size very similar to *V. mystacinus*, for which it may easily be mistaken; distinguished from it, however, by the deep notch on the outer edge of the ear, and by the entire absence of the moustache on the upper lip, as well as by the generally reddish tint of the fur. Ears oblong, as long as the head, bending outward, with a small fold on the inner margin, and a deep notch, with a small lobe beneath it, on the outer margin; tragus subulate, bending outwards, rather more than half as long as the auricle; tail not longer than the body, base of the ears very hairy. Fur on the head and upper parts of the body reddish brown, shaded with yellowish and brown tints, arising from the hairs being brown at the base, yellowish in the centre, and with reddish-brown tips; all the lower parts ashy, with a slightly reddish tinge, which tinge prevails over the upper part of the humerus; ears and membrane dull brown.

Length of head and body from 2 inches to 2 inches 1 line; tail, 1 inch 3 lines; humerus, 11 lines; fore-arm, 1 inch 5 lines; extent of wings from 9 inches to 9 inches 5 lines.—F. M.

Flies rapidly over stagnant waters. Passes the winter in caves and cellars or ruinous buildings.

Is supposed to have occurred a few times in England; widely distributed in France. Has been found in the fortifications of Charlemont. Rare in Italy; sometimes about Rome; occasionally in the northern provinces of Holland. In Belgium, M. de Selys Longchamps has found it near Maestricht and at Louvain. Said to exist in Picardy and near Metz.

Vespertilio Savii.

Vespertilio Savii, TEMM. Monog. vol. ii. p. 197; BUON. Faun. Ital. (figured).

DESCRIPTION.—Inner incisors two-pointed; molars $\frac{4}{5}$; no false molar above. The body is more robust than in *V. Pipistrellus*, but the extent of wing is less; tail very long, free at the point; muzzle wide and blunt; ears very wide, with a fold in front, triangular, much rounded towards the tips, hairy for half their length; tragus short, wide, blunt, the ends inclining towards the head; skull depressed, forehead wide; gape reaching to the anterior margin of the eyes, which are small; feet very small, very much enveloped by the membranes; the interfemoral is ample, the margins curved outwards half-way between the tail and feet, that and the rump almost destitute of fur. Fur of two colours, varied as in *V. discolor*; upper parts bright chestnut, with the points of the hairs bright brown on the head and neck, and ashy yellow on the back; cheeks and chin brown; rest of the body beneath blackish brown, with the points of the hairs yellowish white.

Length of head and body, 1 inch 6 lines; tail, 1 inch 6 lines; fore-arm, 1 inch 3 lines; extent of wings, 8 inches.—F. M. The above measurements are from Temminck; the following from the Prince of Musignano's 'Fauna Italica':—Head and body, 1 inch 11 lines; tail, 1 inch 3 lines; fore-arm, 1 inch 3 lines; extent of wings, 8 inches 2 lines.

The conspicuous whitish colour of the abdomen distinguishes this species at once from *V. Pipistrellus*.

Found in Dalmatia and elsewhere on the east coast of the Adriatic, and in Sardinia. A single specimen was obtained at Pisa, by Professor Savi; and one at Rome, by the Prince of Musignano, who also received it from Sicily.

Vespertilio albolimbatus.

Vespertilio albolimbatus, BUON. Faun. Ital. (figured).

Vesperugo Kuhlii, BLASIUS, Wirbelth. Deutschl.

DESCRIPTION.—Teeth 32 in number. The muzzle furnished with scattered, dark hairs, blackish, swollen, rather short, the space from the ears to the top of the nose is little greater than that between the ears, the nose, as it were, sunk between the swollen nostrils; ears three-fourths of the length of the head, oval-triangular, with rounded tips, not notched, but with a conspicuous fold on the outside at base, expanded, with whitish hairs inside; tragus as long as the feet, slender, long-oval; wings very thin, when folded to the body reaching a little beyond the tip of the nose, furnished near the body with scattered whitish hairs; general colour blackish, with white transverse veins, edged with white for the whole extent of the hinder margin, which edging increases in size between the last finger and the foot, forming a whitish curved space inside the wing, about a quarter of an inch broad; the interfemoral membrane is of a lighter colour than the wings, slightly curved on the margin, which is edged with white; the feet free, claws white. Fur of the head and back dull cinnamon-grey, becoming pale towards the tail, the bases of the hairs blackish; body beneath ashy white with a yellowish tinge, lightest near the tail; bases of the hairs always black for a large portion of their length; tail and membrane clothed with scattered yellowish hairs on both sides.

Length (in a very young specimen) of head and body, 1 inch 2 lines; of the tail, 1 inch 5 lines; of the fore-arm, 1 inch 4 lines; extent of wings, 7 inches 4 lines.

Flight rapid; appears late in the evening.

Has been found only in the Island of Sardinia. Abun-

dant near Cagliari along the coast. Frequents buildings, and is never met with in caves.

Vespertilio Alcythõe.

Vespertilio Alcythoe, BUON. Faun. Ital.; TEMM. Monog. vol. ii. p. 198 (figured).

Vesperugo Kuhlii, BLASIUS, Wirbelth. Deutschl.

DESCRIPTION.—Upper incisors very unequal in size; molars $\frac{4-4}{5-5}$, of which one on each side below is false. Easily mistaken at first sight for the young of *V. serotinus*. Skull depressed as in that species, and the tragus of the same shape; it can, however, be distinguished from it by its smaller size, the colour of its fur, and its sharper ears; the space from the ears to the tip of the nose equals in length that between the ears; the nose is depressed at the top, and slightly notched between the nostrils; the distance between the eyes equals that from the eye to the tip of the nose; the region of the eyes is naked, the eyebrows long and silky; ears small, slightly pointed, without notches, their width half as great as their length; tragus half as long as the auricle, semicordate, and pointed; tail not reaching beyond the membrane; the wings, when folded and pressed close to the body, reach to the nose. Fur long and thick; on the muzzle and forehead Isabel-grey; the hairs on the back blackish from the base for half their length, the upper halves grey, those on the belly blackish at their base, cinnamon-colour towards their points; the membranes along the legs and thighs clothed with dark reddish hairs. In colour resembling *V. Vispistrellus*, but differing from it in the shape of the ears and skull.

Length of the head and body, 1 inch 8 lines; tail, 1 inch 3 lines; fore-arm, 1 inch 3 lines; extent of wings, 8 inches 2 lines.—F. M.

First observed by the Prince of Musignano, who obtained this and the two following species from Sicily.

Vespertilio Leucippe.

Vespertilio Leucippe, BUON. Faun. Ital. (figured); TEMM. Monog. vol. ii. p. 199.

DESCRIPTION.—Teeth 32; molars $\frac{4-4}{5-5}$; one false molar in the lower jaw. This species is recognized by the bright silvery tinge which prevails over its lower parts, and the cinnamon colour of the parts above. The muzzle is thick, wide, depressed, and a good deal rounded, thus differing from the next species, in which it is very much pointed; the outline of the snout is almost a semicircle; the nose is slightly indented between the nostrils; the gape extends to a point below the anterior margin of the eyes; the ears are one-fifth shorter than the head, and one-third narrower than their length, a little rounded and slightly notched on the upper portion; tragus less than one-third of the length of the auricle, and semiorbicular; the wings, when folded against the body, scarcely reach to the angle of the mouth; the interfemoral membrane is polygonal, without notches or lobes. Fur long, thick, of two colours; above, the hairs are black at base, the tips bright cinnamon; beneath, dark grey at base, silvery white at the tips; membranes sooty; lips, nose, and ears quite black, except at their extremities, which are light flesh-colour, at least in specimens preserved in spirits.

Length of head and body, 1 inch 9 lines; tail, 1 inch 3 lines; fore-arm, 1 inch 3 lines; extent of wings, 8 inches 10 lines.

Received by the Prince of Musignano from Sicily.

Vespertilio Aristippe.

Vespertilio Aristippe, BUON. Faun. Ital. (figured); TEMM. Monog. vol. ii. p. 200.

DESCRIPTION.—Molars $\frac{4-4}{5-5}$. Distinguished by its pointed muzzle from *V. Leucippe*, which it resembles in size and general appearance; the ears also are notched nearer their base than in that species. The muzzle is straight, slightly angular, indented a little between the nostrils, which are small and narrow; the gape scarcely reaches to below the outer margin of the eye; ears small, their width two-thirds of their length, rounded at their tips; tragus semi-elliptic, one-third of the length of the auricle; interfemoral membrane with a small external lobe, the two last joints of the tail are free; the wings, when folded against the body, reach a little beyond the nose. Fur long and thick; on the upper parts dark chestnut at base, buff-colour at the points; on the lower parts deep ash, except at the points, which are a dirty shining white; membranes, nose, and ears quite black.

Length of head and body, 1 inch 7 lines; tail, 1 inch 3 lines; fore-arm, 1 inch 3 lines; extent of wings, 8 inches 3 lines.—F. M.

Temminck observes that this species is closely allied to, if not identical with, *V. Kuhlii*.

Procured in Sicily by the Prince of Musignano.

Vespertilio Krascheninikovii.

Vesperugo Krascheninikovii, EVERSMAAN, Bulletin de la Soc. Imp. des Naturalistes de Moscou, 1853, No. iv. p. 487; Annals and Magazine of Nat. Hist. February 1857.

DESCRIPTION.—The two central incisors in the upper jaw bifid, the outer simple, minute; grinders $\frac{5-5}{5-5}$; in all 34 teeth. Ears shorter than the head, wide, subtriangular, rounded; tragus uniform, not half as long as the ear. Fur black, with the tips of the hairs grey.

No dimensions are given.

A new species described by Eversmann. Said to be found in the Ural, and not uncommon in Orenburg; fuller information is to be desired.

Vespertilio Nathusii.

Vespertilio Nathusii, KEYSERLING u. BLASIUS, Wirbelth. Europ. p. 47;
SCHINZ, Europ. Faun. vol. i. p. 427.

DESCRIPTION.—The edges of the lower incisors are parallel to the jaw, so that these teeth touch at the sides only, and do not overlap each other. The first upper incisor is forked, nearly half as long as the canines, and scarcely higher than the second incisor, with its second division leaning outwards, and almost as long as the first division; the canines are strong, the upper slightly longer than the lower, which latter are longer than the grinders; the outer margin of the ear ends below and behind the angle of the gape; the inner margin is as long as the breadth of the ear, giving it the appearance of an equilateral triangle; the space between the ears is greater than that from the nose to the ear; the snout is short and blunt, its outline nearly semi-circular; the wings are rusty black, near, and along the hind legs, thickly clothed with hair on the upper surface. Fur on the upper parts of the body dull red-brown, on the parts beneath dull greyish yellow, approaching to rusty near the wings; the hairs everywhere, for three-fourths of their length, are brownish black, with their extremities of lighter shades; from the shoulders, passing beneath the ear and along the lower jaw on each side, is a brown streak of a darker shade than the parts adjoining.

Length of head and body, 1 inch 10 lines; tail, 1 inch 3 lines; extent of wing, 8 inches 10 lines.

This Bat has been observed at Berlin, Halle, in Bruns-

wick, on the Rhine, near Trieste in the Alps, and also in the Ukraine, but nowhere in numbers.

Vespertilio Nilssonii.

Vespertilio Nilssonii, KEYSERLING u. BLASIUS, Wirbelth. Europ. p. 50;
SCHINZ, Europ. Faun. vol. i. p. 426; DE SELYS LONG-
CHAMPS, Micromm. p. 139.

DESCRIPTION.—Teeth 32 in number; four grinders in the upper jaw; the two last joints of the tail free; the flying membrane originates at the toes; the outer margin of the ear ends on a line with the gape, about $1\frac{3}{4}$ line behind it; the greatest width of the tragus is below the middle of the inner margin of the ear; the fore-arm, when pressed against the side, reaches only to the gape; the second joint of the fifth finger reaches far above the middle of the same joint of the fourth finger; the membrane of the tail is thickly clothed, as far as its middle, with long hairs; all the membranes have their under side adjoining the body thickly covered with brown hair; the hair on the upper parts of the body are dark brown for two-thirds of their length, the tips being whitish brown, and forming a triangular space on the back; those on the parts beneath are also dark brown below, with light brown extremities; under the ear is a light spot; the first upper incisor is nearly as large as the second; the lower incisors have their edges parallel to each other, but placed obliquely to the jaw, so that they partly overlap; the first grinder of the lower jaw is almost as high and as strong as the second.

Length of head and body, 2 inches 1 line; tail, 1 inch 9 lines; extent of wing, 10 inches.

Inhabits the Hartz Mountains in Germany, and the mountains of Sweden and Norway, probably extending nearly to the Polar Circle. Blasius informs us that it is very common in the North of Russia.

Vespertilio nigricans.

Vespertilio nigricans, CRESPON, Faune Méridionale, vol. i. p. 24;
P. GERVAIS, Zool. et Paléont. Franc.

DESCRIPTION.—Grinding teeth $\frac{5-5}{5-5}$, including a false grinder on each side above and below, which is very small, almost hidden between the canine and first true grinder; tragus blunted, short. Fur on the upper parts of the body dark tawny, that on the lower parts ash-grey; the hair on every part of the body black at the roots; forehead and sides of the neck clear chestnut; snout, cheeks, and ears black; space between the ears and the corners of the mouth naked and blackish; ears oval-triangular, as long as the head, margined and notched on the outer edge near the base; all the membranes black; tail free at the top for about 1 line. A pretty species, from the contrast presented by the three distinct colours of the neck, back, and belly.

Length of head and body, $1\frac{6}{10}$ inch; tail, $1\frac{2}{10}$ inch; extent of wing, $7\frac{2}{10}$ inches.

The female is a little larger than the male, with the fur beneath the body whitish grey.

Discovered by M. Crespon at Nismes, in the South of France, where it is not uncommon in the old Roman ruins, and in the environs of that city. Has been taken in Corsica by M. Requien.

Vespertilio maurus.

Vesperugo maurus, BLASIUS, Wirbelth. Europ. p. 67.

DESCRIPTION.—Teeth 34 in number; the upper canine on each side is nearly half as long again as the second false molar, which it touches, the first false molar being almost hidden between them, and very small. The outer edge of the ear ends behind the angle of the gape, and under the hind corner of the eye; the inner edge is rounded

off at the base; the tragus is widest at the middle, its point much sharpened, and inclining forwards and inwards; at the base of its outer margin is a small blunt tooth; the membrane of the wings reaches to the first joints of the toes; the two last joints of the tail are free from the membrane, which is hairy above and below next the body; beneath, the hairs extend to the fore-arm, the thighs, and more than half-way along the tail; the skin of the ears and wings is very dark brown-black, darker than in any other European species. The fur above is dark brown, lighter below; the hairs are everywhere of two colours; on the upper parts they are dark brown beneath, with yellow or reddish-brown tips; on the under parts of the body they are also dark beneath, with the tips a much lighter brown; the bright brown of the upper parts distinguish this species from all others; the young ones are darker, with dirty white tips to the hairs.

The entire length is 3 inches 2 lines; tail, 1 inch 3 lines; extent of wing, 8 inches 6 lines.—F. M.

First observed in 1847 by Professor Blasius, who states that it occurs only at high elevations, and who names it the Alpine Bat; sometimes it appears above the region where trees grow. It comes out soon after sunset, flies quickly and high, concealing itself in the daytime in the roofs of the chalets.

Is found in suitable situations all along the range of the Alps.

Subgenus 2. PLECOTUS.

Vespertilio auritus.

Vespertilio auritus, DESM. Mamm. sp. 223 ; TEMM. Monog. vol. ii. p. 181.

Plecotus auritus, GEOFFROY, BELL, Brit. Quad. ; BUON. Faun. Ital. (figured).

Long-eared Bat, BELL, *l. c.*

DESCRIPTION.—False molars $\frac{4}{6}$. Head and face flattened ; muzzle somewhat swollen ; nostrils tumid, elongated backwards into a sort of cul-de-sac ; ears very large, more than twice the length of the head, oblong, oval, thin, semi-transparent, with a broad longitudinal fold on their inner margin, near the base of which is a small projecting lobe, ciliated like the rest of the margin ; tragus long oval-lanceolate, the outer margin somewhat sinuous, the inner straight ; ears united over the head, extending round to the mouth ; tail free at top ; forehead and anterior surface of the membrane which connects the ears, hairy, under surface of the same naked. Fur long and silky, brownish grey on the upper parts, paler beneath the body ; the ears are generally curled outwards, but the animal, when at rest, conceals them beneath the fore-arm, the tragus alone remaining erect.

Length of head and body, 1 inch 10 lines ; tail, 1 inch 8 lines ; head, 8 lines ; fore-arm, 1 inch 5 lines ; ears, $1\frac{1}{2}$ inch ; tragus, 7 lines ; breadth of the ears, 9 lines ; breadth of the tragus, $2\frac{1}{2}$ lines ; length of the thumb, $2\frac{3}{4}$ lines ; extent of wings, 10 inches 2 lines.

Resorts generally to roofs of churches and houses ; rarely flies over water.

One of the most common Bats in the British Islands. Is found throughout the warmer and temperate countries of Europe, and in the North of Africa. Very common

throughout France and Germany. Not very plentiful in Russia, and only met with in the more temperate parts of that country (Pallas). Common in Silesia, Galicia, Carniola, Italy, Sicily, Spain, Denmark, and Greece.

Vespertilio brevimanus.

Plecotus brevimanus, BUON. Faun. Ital. (figured); BELL, Brit. Quad. Lesser Long-eared Bat, JENYNS, Brit. Vertebr.; BELL, *l.c.*

DESCRIPTION.—Like *V. auritus* in general appearance. Ears shorter with respect to the head, and rather narrower at the extremity; tragus much larger; tail the length of the fore-arm. The colour of the fur above much darker than on the under parts of the body, whereas in *V. auritus* there is but little difference in this respect. The hairs also are of the same colour throughout their entire length, not darker at their bases, as in the last species.

The dimensions given by Jenyns are as follows:—head and body, 1 inch 6 lines; head, 7 lines; tail, 1 inch 2 lines; ears, 1 inch; tragus, $5\frac{1}{2}$ lines; breadth of the ears, 5 lines; of the tragus, 2 lines; length of the fore-arm, 1 inch 2 lines; thumb, 3 lines; extent of wings, 6 inches 6 lines.

An individual found in Sicily by the Prince of Musignano, was not smaller than *V. auritus*, as observed by that author, who gives the following dimensions in his ‘Fauna Italica:’—head and body, 1 inch 7 lines; head, 8 lines; tail, 1 inch 8 lines; ears, 1 inch 5 lines; fore-arm, 1 inch 5 lines; thumb, 3 lines; extent of wings, 9 inches 6 lines.

Found as yet only in England, where one was discovered in Cambridgeshire by the Rev. L. Jenyns in a willow, and in Sicily, as mentioned above.

Its specific distinctness from the preceding appears exceedingly doubtful.

Subgenus 3. BARBASTELLUS.

Vespertilio Barbastellus.

Vespertilio Barbastellus, DESM. Mamm. Sp. 224; TEMM. Monog. vol. ii. p. 202.

Barbastellus communis, BUON. Faun. Ital. (figured).

Barbastellus Daubentonii. The Barbastelle, BELL, Brit. Quad.

Plecotus Barbastellus, CUVIER, Règ. Anim.; *La Barbastelle*, BUFFON.

DESCRIPTION.—Teeth 34 in number; molars $\frac{5-5}{5-5}$, of which two in each jaw are false. Muzzle truncated, a groove leads on each side upwards to the nostrils, which are placed in a hollow; the muzzle is naked, extending back to the union of the ears; cheeks rather tumid, covered with black hair, forming a sort of moustache; ears about as long as the head, nearly as broad as long, irregularly four-sided, the inner edges turned back, forming a longitudinal groove within the margin; the outer angle prominent, rounded, and turned back; beneath this, on the outer margin, is rather a deep notch, from which five or six transverse folds extend about half-way across the ear; the anterior and inner angles unite immediately behind the muzzle; tragus more than half as long as the ear, irregularly lanceolate or semicordate, with a protuberance near the outer angle of its base; apex rounded; eyes very small, close to the auricle, almost concealed by the hair; interfemoral ample, with about twelve transverse lines; tail free for one line. Darker than any other British species, nearly black on the upper parts, with a few white hairs; hinder parts reddish brown; belly lighter than the back, the hairs being greyish at tip, black at the roots; ears, muzzle, and membranes dusky black.

Length of head and body, 2 inches; head, 7 lines; tail, 1 inch 9 lines; ears, 6 lines; tragus, $1\frac{1}{2}$ line; fore-arm, 1 inch $4\frac{1}{4}$ lines; extent of wings, 10 inches 5 lines.

Frequents old buildings and cellars ; flies late in the evening. Is rare in every country where it has been found.

Has occurred several times in England. Is found in France (in Picardy), in Germany, Gallicia, Silesia, Denmark, Carniola ; very rarely in Belgium. In Italy, although uncommon, appears to exist in many localities. Blasius has found it in the Alps at considerable elevations ; in Central Russia, and Hungary.

Order INSECTIVORA.

The incisive teeth varying in number ; the summits of the molars with conical points ; the feet armed with strong claws, and the soles of the hinder feet applied to the ground in walking.

Genus **SOREX**.

Animals of diminutive size. Snout much prolonged, moveable ; ears short, or scarcely apparent ; eyes very small ; feet moderate, with five toes, furnished with nails, not adapted for burrowing ; tail as long as, or a little shorter than, the body.

Subgenus 1. **SOREX**.

Teeth 30 or 32 in number, with their points more or less stained ; the two lower incisors with the edges denticulated, the two upper ones forked. Between the incisors and the three molars are five (rarely four) small intermediate teeth, diminishing in size gradually from the first to the last. Ears concealed by the fur, and much

shorter than it; tail slightly squared in the adult, rounded and somewhat contracted at the base; in the young, covered with short equal hairs; toes almost naked, not fringed with stiff hairs.

Sorex tetragonurus.

Sorex tetragonurus, DESM. Mamm. Sp. 234; DE SELYS, Micromm.; JENYNS, Ann. Nat. Hist. 1838, 1841.

DESCRIPTION.—Upper parts of head and body blackish, or reddish brown, varying in different individuals. Body beneath and throat whitish ash, extending high up on the sides; at the point where this colour meets that of the back, there is a narrow line of reddish, thus causing the transition between the two to be less abrupt than in *S. leucodon*, though it is much more so than in *S. araneus*; tail of equal length throughout, slightly angular, especially when old, more than half as long as the body, either clothed with very short equal hairs, or naked; dark brown above, whitish beneath, generally ending with a small tuft; snout nearly as much prolonged as in *S. pygmaeus*, velvety; feet flesh-coloured, almost naked, or with very short hairs of a whitish colour; the claws are not covered by these hairs; cutting teeth much denticulated, and deeply stained with dark brown in the young; in the adult, a good deal worn, and the colour not so deep.

Entire length, from 3 inches 3 lines to 4 inches $5\frac{1}{2}$ lines; body, from 2 inches 9 lines to 3 inches; tail, from 1 inch $5\frac{1}{2}$ lines to 1 inch 6 lines.

Frequents gardens and moist woods; utters a shrill cry, like a grasshopper.

Inhabits nearly all Europe, from Sweden and Russia to Italy and Spain. Is the most common species in England.

Sorex rusticus.

Sorex rusticus, JENYNS, Ann. Nat. Hist. vol. i. & vol. vii.; DE SELYS LONGCHAMPS, Micromm. p. 40.

This species has been separated from the preceding by the Rev. L. Jenyns by the following distinctive characters:—The 1st, 2nd, 3rd, and 4th intermediate teeth (lateral incisors) diminish more gradually and regularly; the 5th is larger in proportion to the others, and more visible externally; the tail is thick, cylindrical throughout, well clothed with hairs, which, in the young animal, stand out entirely from the tail, and never become adpressed at any age; the extremity of the tail is not narrowed, but ends abruptly, and is longer than in *Sorex tetragonurus*, although the whole animal is smaller; the feet are more slender and weaker; the space between the eyes half as long as that between the eyes and the end of the snout, whereas in the preceding species it equals three-fourths of that space; the body above is redder, and beneath with more of a yellowish tinge.

Entire length, from 3 inches $4\frac{1}{2}$ lines to 4 inches; body from 2 inches 1 line to 2 inches 6 lines; tail, from 1 inch $3\frac{1}{2}$ lines to 1 inch 6 lines.

Its habits are probably identical with those of the last species.

This is the commonest species of England next to *S. tetragonurus*, and is by far the most common species in Ireland. It does not appear to have been hitherto observed elsewhere than in Britain.

Sorex pygmæus.

Sorex pygmæus, DE SELYS, Micromm.; SCHINZ, Europ. Faun. vol. i. p. 27; KEYS. u. BLAS. Wirbelth. Europ.

DESCRIPTION.—About half the size of *S. araneus*. Tail rather shorter than the body, covered with hair of equal

length, forming at the tip a tuft of two lines long, constricted at the root, then thick and rounded; lower incisor denticulated; snout very long, and velvety; ears very short, hidden in the fur, but more easily seen than in *S. tetragonurus*. Upper parts of the head and body grey-brown, tinged more or less with tawny reddish; all the lower parts ashy, except the throat and lips, which are whitish, tinged with red-brown; feet whitish, more hairy on the claws than in *S. tetragonurus*.

Weight, from 33 to 40 grains. Entire length, 3 inches $3\frac{1}{2}$ lines; body, 1 inch 10 lines; tail, 1 inch $5\frac{1}{2}$ lines.—F. M. Is the smallest quadruped next to *S. Etruscus*.

Has been found in Belgium twice by M. de Selys Longchamps. Inhabits Russia, Siberia, and Germany, as far west as Frankfort-on-the-Main. Is said by Gervais to have been found near Strasburg. Is not uncommon in Silesia, Gallicia, and the Bukovina.

Sorex alpinus.

Sorex alpinus, DE SELYS, Micromm.; SCHINZ, Faun. Helv.

DESCRIPTION.—In shape the same as *S. araneus*, but the tail is longer than the body, so as at once to distinguish it from that species. Ashy above, covered with long white hairs beneath. The dentition resembles that of *S. tetragonurus*. The lower incisors are toothed. The general colour of the fur is pure slate-grey above, passing insensibly to a lighter shade beneath; feet ashy; whiskers very long, whitish.

Entire length, 5 inches 2 lines; body, 2 inches 6 lines; tail, 2 inches 8 lines.—F. M.

Discovered on the Mount St. Gothard, and first made known by Professor Schinz, in his 'Fauna Helvetica,' as frequenting the banks of mountain torrents in that part of the Alps.

Subgenus 2. CROSSOPUS.

Lower incisors not toothed ; upper incisors hooked. The two first intermediate teeth equal, the third a little smaller, the fourth rudimentary ; the points of all the teeth more or less brown ; their total number is 30. Ears velvety, much shorter than the fur ; tail more or less compressed for a portion of its length, clothed with short, equal hairs ; feet wide, fringed with stiff hairs, adapted for swimming. All the species are aquatic, swimming and diving with ease. Their fur is dense.

Sorex fodiens.

Sorex fodiens, DE SELYS, Micromm. ; BELL, Brit. Quad.
The Water Shrew.

DESCRIPTION.—Stouter than *S. araneus*. The tail as long as, or slightly shorter than, the body, compressed for almost its whole length, blackish, composed of scaly rings, bordered beneath by a fringe of stiff whitish hairs. Fur velvet-black above, contrasting with the lower parts of the body, which are white or whitish, sometimes with a tinge of reddish or ash ; the edges of the lips, and a very small spot behind the eye, are also whitish ; feet covered with very short, dark, ashy hairs, fringed with stiff, closely pressed, whitish hairs ; snout thick ; whiskers black.

The above is the normal appearance of this species.

Var. A. Belly distinctly tinged with yellow, and the separation of the two colours less decided. In this state it approaches a similar variety of *S. ciliatus* ; but the ears are black, or dark, and the white spot behind the eye of *S. fodiens* is present.

Var. B. Without a white spot behind the eye. This variety is of rare occurrence.

Entire length, 5 inches 5 lines ; body, 3 inches 2 lines ; tail, 2 inches 3 lines. Some individuals from the shores of

the Baltic, mentioned by M. de Selys Longchamps, measure 7 inches 1 line in total length; body, 3 inches 6 lines; tail, 3 inches 7 lines.

This Shrew inhabits the banks of brooks, rivers, and stagnant waters of almost the whole of Europe. Is not uncommon in parts of England, and has been found in Scotland, but not in Ireland. It is rare in the South of France, and in the centre and South of Italy.

Sorex ciliatus.

Sorex ciliatus, DE SELYS, Micromm.

Sorex remifer, BELL, Brit. Quad.; DESM. Mamm. Sp. 238; SCHINZ, Europ. Faun. vol. i. p. 28.

DESCRIPTION.—Incisors toothed; teeth coloured at their points; upper parts of the body almost black; parts beneath ash-brown or red-brown, passing insensibly into these shades from the colour of the parts above; throat clear ash; a tuft of white hairs on the upper lobe of the ear; feet covered with very short, ashy hairs, and fringed with stiff, adpressed, greyish hairs; tail almost as long as the body, nearly black, compressed for nearly its entire length, composed of scaly rings, and displaying beneath a fringe of stiff ashy hairs, adapted to serve as a sort of oar in swimming; snout thicker than in *S. tetragonurus*; whiskers black.

Entire length, 5 inches 3 lines; body, 3 inches; tail, 2 inches 3 lines.

This species, which nearly approaches the foregoing, is distinguished from it by the darker colour of the belly, the absence of a marked line of separation between the colours of the upper and lower parts of the body, by a white spot on the ear, and by wanting the small spot of that colour behind the eye. In rare instances, the belly is dirty white, and the white spot on the ear is wanting.

Its habits are the same as those of *S. fodiens*.

It is rare in England and Scotland, in which latter country it has occurred most frequently near Glasgow. In France, it has been found near Abbeville, Chartres, and in the Department of the Gard. In Belgium, near Liege, and in Germany, at Frankfort-on-the-Main, where, says De Selys Longchamps, it is more common than *S. fodiens*.

On the whole, it seems doubtful whether or not these two (so-called) species are really distinct.

Genus **CROCIDURA.**

The two lower incisors not dentated, the two upper with a pointed heel; the three or four intermediate teeth in the upper jaw becoming less from the first tooth; all the teeth are white, 28 or 30 in number; ears oval, well-developed, distinctly longer than the fur, nearly naked; tail shorter than the body, rounded, diminishing in thickness from the root, which is very thick, furnished with long isolated hairs and scattered through many short ones; feet almost bare, without stiff hairs. Fur resembling in its texture that of the Mouse.

Crocidura Etrusca.

Pachyura Etrusca, BUON. Faun. Ital.

Crocidura Etrusca, BUON. Faun. Ital.; DE SELYS, Micromm.

DESCRIPTION.—Teeth in number 30, four intermediate in the upper jaw. Tail shorter than the body, slightly squared, of almost a uniform thickness to the tip, where it ends in an abrupt point; grey-brown above, whitish beneath, covered with very short hairs, forming a tuft at the end; from each joint springs a circle of very fine whitish hairs about two lines in length; eyes very small; upper parts of head and body ashy, with more or less of a

reddish tinge; all the lower parts clear ashy, running gradually into the shade of the upper parts; whiskers numerous and very fine; ears very large, distinctly longer than the fur, covered with very small whitish hairs.

Entire length, 2 inches 6 lines to 2 inches 9 lines; body, 1 inch 7 lines to 1 inch 10 lines; tail, 11 lines.

Is supposed to be the smallest known quadruped.

Discovered in Tuscany by Professor Savi; found also in the hills near Rome in dry situations. Crespon, in his 'Faune Méridionale,' mentions that two were found near Nismes in the South of France.

Crocidura aranea.

Crocidura aranea, DE SELYS, Micromm.

Sorex araneus, SCHINZ, Europ. Faun.; KEYS. und BLAS.; DESM. Mamm. Sp. 232.

La Musaraigne, BUFFON.

DESCRIPTION.—Teeth in number 28, all white; four intermediate teeth in the upper jaw. Fur mouse-grey above, passing gradually into whitish ash beneath; tail of the same colour, clothed with short hairs, with longer hairs scattered among them, shorter than the body; feet light ashy; ears well developed, disengaged from the fur, covered with very short hairs, ashy on the upper lobe, whitish on the lower; toes and tip of snout flesh-coloured; albinos and spotted varieties sometimes occur; and in some individuals the belly is white, and the general tinge of the fur more or less of a red-brown.

Entire length, 4 inches to 4 inches 2 lines; body, 2 inches 8 lines to 2 inches 11 lines; tail, 1 inch 4 lines.—F. M.

Frequents gardens and the neighbourhood of houses.

Inhabits the greater part of Europe, but is not known in Sweden or the British Islands. Is common in Russia,

France, Italy, and Switzerland. Generally distributed through Germany, Poland, and Carniola. Is not uncommon in Belgium.

Crocidura leucodon.

Crocidura leucodon, DE SELYS, Micromm.

Sorex leucodon, DESM. Mamm. Sp. 236.

DESCRIPTION.—All the teeth are white. Fur more or less blackish above, white beneath and on the sides, the line of division of these colours distinct; the tail rather shorter than in *C. aranea*, dark above, whitish beneath, with long scattered white hairs; the snout longer and darker than in that species, which in size and proportion it much resembles.

Entire length, 3 inches 8 lines; body, 2 inches $6\frac{1}{2}$ lines; tail, 1 inch $1\frac{1}{2}$ line.—F. M.

Found in the north-east of France, and in the west of Germany, more commonly than *C. aranea*. Rare in the South of France. Has been observed at Lyons, Metz, and Strasburg. In Belgium, near Tournay. The Prince of Musignano says that it is met with in the Alban Hills near Rome, and that it inhabits all Central and Southern Europe.

Genus **MYGALE.**

The two intermediate incisors of the upper jaw triangular, very strong, flattened; lower incisors sometimes four, with the central ones smaller than those on the outside, sometimes six, all nearly equal; canines not to be distinguished from the lateral incisors and anterior grinders; the four last grinders above, and the three last below on each side, with sharp tubercles; snout prolonged, very flexible; no outward ears; eyes very small.

Mygale Muscovitica.

Mygale Muscovitica, DESM. Mamm. Sp. 243.

Sorex Moschatus, PALLAS, Zoog. Ross. As. vol. i.

Myogale Moschata, KEYS. und BLASIUS, Wirbelth. Europ. p. 58.

Myogalea Moscovitica, SCHINZ, Europ. Faun. vol. i. p. 96.

Le Desman, BUFFON.

DESCRIPTION.—Incisors $\frac{2}{4}$; intermediate teeth $\frac{6-6}{6-6}$; molars $\frac{4-4}{3-3}=44$. Tail shorter than the body, scaly, almost naked, constricted near the root, cylindrical and swollen in the middle, and compressed vertically at the extremity. Fur shining, composed of two kinds of hair, one long, the other close and downy like that of the beaver; upper parts of the body brown, becoming darker on the sides; belly silvery white; some scales on the upper parts of the toes; has a strong musky odour proceeding from glands beneath the tail; some portion of the face white.

Length of head and body, 8 inches; tail, 6 inches 9 lines.

—F. M. Weighs about six ounces.

Swims with great facility, remaining long under water, with only the end of the snout, where the nostrils are placed, exposed; burrows in the banks of streams and pools; feeds on insects, worms, and especially on leeches, sometimes eating the root of the water-lily.

Is found in Southern Russia, where it is common in the Volga and its tributaries, and in the Don.

Mygale Pyrenaica.

Mygale Pyrenaica, DESM. Mamm. Sp. 244; Cuv. Règ. Anim.

Myogale Pyrenaica, KEYS. u. BLAS. Wirbelth. Eur. p. 59.

Myogalea Pyrenaica, SCHINZ, Europ. Faun. vol. i. p. 26.

DESCRIPTION.—Incisors $\frac{6}{8}$; canines $\frac{1-1}{1-1}$; molars $\frac{7-7}{6-6}=44$. Tail longer than the body, diminishing gradually from the root to the tip, cylindrical for three-fourths of its length,

compressed vertically towards the extremity, covered with short adpressed hairs; claws as long again as in the last species, and the outer claw of the hind-feet much more free. Fur composed, like that of the *M. Moscovitica*, of two kinds; all the upper parts of the body chestnut-brown; the sides greyish brown, and the belly silvery grey; no white on the face.

Length of head and body, 4 inches; tail, 4 inches 6 lines.—F. M.

Found along streams in the valleys of the French Pyrenees, and near Tarbes.

Genus **ERINACEUS.** HEDGEHOG.

Middle incisors very long, standing forward; the upper ones cylindrical, apart; molars $\frac{7-7}{4-4}$. Body covered with spines; tail very short.

Erinaceus Europæus.

Erinaceus Europæus, DESM. Mamm. Sp. 229; BELL, Brit. Quad.
Common Hedgehog.

DESCRIPTION.—Teeth 36 in number. Incisors above very far apart; the true molars have strong acute tubercles; the teeth, classed as canines by Desmarest and others, are regarded by F. Cuvier as false molars. The neck is short; the whole body is covered above and at the sides with sharp, hard, round spines, attenuated at each end about 1 inch long, irregularly disposed in groups diverging in all directions, of a dirty white, with a brown or blackish ring rather above the middle; very low on its legs; snout, forehead, sides of the head, sides and under part of the tail, throat, breast, and legs covered with hard, brittle, yellowish-white hair.

Length of head and body, 9 inches 6 lines; head, 3 inches; tail, 9 lines; ears, 1 inch.

Coils itself into a compact ball on the approach of danger. Feeds on insects, sometimes on eggs and roots of plants; is easily tamed; passes the winter in a state of complete torpor, retiring to hollow trees and other sheltered situations; produces from two to four young at a birth, early in the summer.

Inhabits the whole of Europe, excepting Norway and Lapland. Is common in the British Islands.

Erinaceus auritus.

Erinaceus auritus, DESM. Mamm. Sp. 230; PALLAS, Zoog. Ross. As.

DESCRIPTION.—Rather smaller than *Erinaceus Europæus*. Muzzle short; ears two-thirds of the length of the head; spines not arranged in tufts, separate, leaning backwards when in repose; nostrils toothed like a cock's comb; legs rather more slender and longer than in the common species; tail shorter, conical, almost naked. Fur finer; four rows of bristles on the snout; spines white at the base, with a very narrow ring of blackish brown in the middle, and dull yellow at their points.

Has two broods in the year, producing six or seven young at a birth.

Inhabits the province of Astrachan, between the Volga and Jaik (or Ural) rivers; as well as Tartary, beyond Lake Baikal, and Egypt.

Genus **TALPA.** MOLES.

Teeth.—Incisors $\frac{6}{8}$; canines $\frac{1}{1}$; molars $\frac{7}{6}$. Body very thick; fore-feet short and broad, formed for digging; tail short; no external ears.

Talpa Europæa.

Talpa Europæa, DESM. Mamm. Sp. 250.

Talpa vulgaris, BELL, Brit. Quad.

The Common Mole.

DESCRIPTION.—Body thick, oblong, almost cylindrical; snout sharp and slender. The teeth are sharp-pointed; incisors very small; canines long and very sharp; false molars $\frac{4-4}{3-3}$, like the canines, but much smaller; the true molars broad, with several sharp tubercles; eyes extremely small, concealed in the fur; feet very short; fore-feet largest, inclining sideways. Fur very soft and silky, black, in some light ashy grey: spotted, white, and yellow varieties are not uncommon.

Length of head and body, 5 inches 3 lines; head, 1 inch 7 lines; tail, 1 inch 2 lines.

Lives underground, forming galleries and throwing up hillocks; feeds on worms and insects; breeds twice in the year, producing from four to six at a birth.

Common in England and Scotland, but unknown in Ireland. Found in nearly all the countries of Europe, all over Russia and France. In Italy it scarcely goes south of Lombardy, where it gives place to the next species.

Talpa cæca.

Talpa cæca, BUON. Faun. Ital. (figured); GEOFFROY, St. Hilaire.

DESCRIPTION.—This Mole, which was first distinguished by Professor Savi, and is well described and figured by the Prince of Musignano in his 'Iconografia della Fauna Italica,' differs from the common species in having the eyes concealed beneath the skin, which, instead of opening by means of eyelids or otherwise, is spread continuously over the organs of sight; its structure, however, is so thin, that

the black of the eyeball can be seen through it, and the eye is doubtless able to receive a certain portion of light, although it is hardly possible that it can have the power of distinguishing objects, especially as the fur hangs thickly over all. The two species differ likewise in the size of the two anterior incisor teeth of the upper jaw, these being rather larger than the others in the *Talpa cæca*, whereas in the *Talpa Europæa* all the incisors are equal. In size, shape, colour, and in every other respect, they are identical.

This species inhabits Tuscany and the rest of Central and Southern Italy, where it is the only one known. The Mole of the North of Italy is the *Talpa Europæa*. The Blind Mole has been found also in some parts of the South of France, in the North of Italy, Dalmatia, and Greece.

Order CARNIVORA.

With three kinds of teeth ; six incisors in each jaw, except in some species of Seals ; feet armed with claws.

Division I. PLANTIGRADES,

i. e. those which walk upon the entire sole of the foot.

Genus **URSUS.** BEARS.

Lower incisors set in the same line ; grinders varying in number, the three last large and tubercular.

Ursus arctos.

Ursus arctos, DESM. Mamm. Sp. 254.

The Brown Bear.

DESCRIPTION.—Blackish brown ; forehead convex above the eyes ; snout suddenly tapering ; body entirely covered with

thick, shaggy hair, varying from chestnut-brown to black ; soles of the fore-feet with their anterior half naked, those behind naked throughout ; ears short and rounded ; eyes small ; tail very short.

Length of head and body, 3 feet 7 inches ; head, 1 foot ; fore-foot, 7 inches 7 lines ; hind-foot, 8 inches 10 lines.

Feeds chiefly on nuts and roots ; is fond of fruit, seldom attacking animals unless pressed by hunger.

Extinct in the British Islands for at least eight centuries ; is found in most of the high mountain ranges of Europe, viz. the Pyrenees, Alps, Carpathians, &c., as well as of the southern and temperate parts of Asia. In the Pyrenees it is now more common on the Spanish than on the French side. Said not to occur in any other part of Spain. Was found at a recent period in the Vosges Mountains, and now in the Jura and French Alps. In Switzerland Bears are rare, and chiefly confined to the Grisons ; five were seen together in the Engadine in 1852. In Sweden and Norway they are not uncommon from about the 58th degree of north latitude to the North Cape ; they are numerous in the northern and temperate regions of the whole of Russia where forests occur ; and in the Caucasus, grizzled, white, and small brown mountain varieties are met with.

Ursus maritimus.

Ursus maritimus, DESM. Mamm. Sp. 257.

Ursus marinus, PALLAS, Zoog. Ross. As.

Polar Bear.

DESCRIPTION.—Body and neck longer in proportion than in the Brown Bear ; the head lengthened and flattened ; ears and mouth comparatively small, the former rounded ; soles of the feet very large and clothed with fur ; snout large and black ; the whole coat dense and long, silvery white tinged with yellow ; claws black, rather short and stout,

not much curved; behind each canine tooth is a small conical one, which is wanting in the Brown Bear.

The entire length of a full-grown male is from 7 to 8 feet, its weight from 1000 to 1200 pounds. It feeds almost exclusively on animal substances, seals and fish, alive or dead.

The Polar Bear inhabits the North Polar regions and Spitzbergen. Is often carried on detached masses of ice to Iceland and Norway. Pallas says that it is frequently met with on the whole coast of the Arctic Sea.

Genus **MELES.**

Second incisor on each side in the lower jaw placed behind the others; grinders $\frac{5-5}{6-6}$, the first very small, the last tubercular; body low on the legs; a glandular pouch under the tail.

Meles taxus.

Meles vulgaris, DESM. Mamm. Sp. 266.

Meles taxus, BELL, Brit. Quad.

The Badger.

DESCRIPTION.—Body thick; hair rigid and long, grey on the upper parts, black on the throat, breast, belly, and legs; head above white, with a longitudinal black spot on each side, beginning between the end of the nose and the eye, and ending behind the ears; toes five on each foot; claws long and bent; eyes very small; ears short and rounded, almost concealed in the hair.

Length of head and body, 2 feet 6 inches; head, 6 inches 8 lines; ears, 1 inch 4 lines; tail, 7 inches.

Burrows in the ground; feeds on vegetables, roots, nuts, as well as on mice, frogs, and insects.

The Badger is found throughout the British Islands, but

is nowhere numerous. It inhabits probably every country of Continental Europe, and extends into Asia. According to Pallas, is especially common in Livonia. In France it is not uncommon in many districts.

Genus **GULO**.

Teeth.—Incisors, $\frac{6}{6}$; canines, $\frac{1-1}{1-1}$; molars, $\frac{5-5}{6-6}$ or $\frac{4-4}{6-6}=36$ or 38; the second incisor in the lower jaw a little behind the others; the two or three first upper molars compressed, cutting; the fourth larger, with two sharp points; the fifth small and tubercled; the four first lower molars simple, the fifth with two sharp points, the sixth tubercled; body low on the legs, no pouch near the tail.

Gulo arcticus.

Meles Gulo, PALLAS, Zoog. Ross. As.

Gulo arcticus, DESM. Mamm. Sp. 267.

The Glutton.

DESCRIPTION.—Snout black as far as the eyebrows; eyes small and black; space between eyebrows and ears white, mixed with brown; ears covered with short hair; lower jaw and inside of fore-feet spotted with white; legs, tail, back, and belly black or brownish black; sides, from the shoulders to the tail, bright chestnut; a white spot on the navel; fore-feet with a callosity under each claw, and five others on the sole, one of which is behind the others; hind-feet without this last-named callosity, but having the others.

Length about 2 feet 4 inches from nose to tail; tail, including hair, 8 inches; height at shoulder, 1 foot.

Feeds on animal substances, attacking even large animals, such as Elks and Reindeer, springing upon them from trees.

The Glutton is found in all the countries, both of Europe and Asia, which are washed by the North Sea; common

all over the northern parts of Norway and Sweden. Pallas says that it is rare in Russia, except in the great forests of the North.

Division II. DIGITIGRADES,

i. e. those which do not walk on the entire sole, but chiefly on the toes.

Genus **MUSTELA.**

Teeth.—Incisors, $\frac{6}{6}$; canines, $\frac{1-1}{1-1}$; molars, $\frac{4-4}{5-5}$ or $\frac{5-5}{6-6}$; grinders cutting, except the last in each jaw, which is tubercled; body very much elongated; legs short; ears short and rounded.

Mustela Putorius.

Mustela Putorius, DESM. Mamm. Sp. 271; PALLAS, Zoog. Ross. As.;
BELL, Brit. Quad.

The Polecat.

DESCRIPTION.—Four molars above, five below, on each side; hair on the body of two kinds, the longer shining, of a dusky brown, the shorter more woolly, of a tawny or yellowish white, giving a general tint of brownish yellow; legs and tail uniform dusky brown; space round the mouth, and edge of ears, white.

Length of head and body, 1 foot 6 inches; head, 2 inches 10 lines; ears, 6 lines; tail, 5 inches 6 lines.

Burrows in the ground, coming out at night; feeds both on animal and vegetable substances.

Desmarest says that “it is found in the temperate regions of Europe.” It is not common in England and Scotland. Is not rare in many parts of France. In Russia, according to Pallas, it occurs everywhere except in the extreme north, and is the most common of the smaller Feræ. It is in-

cluded by the Prince of Musignano among the animals of Italy.

Mustela Furo.

Mustela Furo, DESM. Mamm. Sp. 273; BELL, Brit. Quad.
The Ferret.

DESCRIPTION.—Teeth as in last species, smaller and more slender than the Polecat; the snout longer in proportion. Fur bright yellow, here and there tinged with white, sometimes a mixture of white, black, and tawny, with the tail black; eyes red.

Length of head and body, 1 foot 2 inches; head, 2 inches 6 lines; ears, 6 lines; tail, 5 inches 6 lines.

A native of Africa, whence it has been introduced into Spain, and is very numerous in that country. In other parts of Europe it exists only in a half-domesticated state, being kept for hunting rabbits. Cook, in his 'Sketches in Spain,' doubts the existence of the Ferret in that country in a wild state. The question deserves the attention of future travellers.

Mustela Sarmatica.

Mustela Sarmatica, DESM. Mamm. Sp. 274; PALLAS, Zoog. Ross. As.;
SCHREB. pl. 132.

Putorius Sarmaticus, KEYS. u. BLAS. Wirbelth. Europ. vol. i. p. 68.

DESCRIPTION.—In general form very like *Mustela Putorius*, the head narrower, body more elongate, the tail longer, and the fur shorter; the head is triangular; long whiskers on the upper lip; ears short and rounded; claws of fore-feet longer than those of the hinder feet; tail furnished with long hairs; hair of the body thick and not firm, about half an inch long, and without wool at the base. Fur shining; round the mouth and ears, the top of the head and forehead, white; the body brown, varied with small yellow

spots, which become white in winter ; a white stripe obliquely over the eyes ; a yellow longitudinal one on each side of the head ; one of the same colour over each shoulder ; body black below, as well as the feet ; hairs of the tail near its root ashy at their base, black in the middle, and whitish at their points ; those at the extremity of the tail ashy at base and black at their points ; nose black ; nails whitish ; tongue rough above ; teats ventral, 6 in number.

Length of body and head together, 13 inches 6 lines ; head, 2 inches 2 lines ; ears, 6 lines ; tail, 6 inches 6 lines.

According to Desmarest, it is found in Poland, especially in Volhinia. Pallas says that it is peculiar in Russia to the region between the Don and Dniester. Rare in the Crimea. Has occurred in the Bukovina.

Mustela vulgaris.

Mustela vulgaris, DESM. Mamm. Sp. 275.

Mustela Gale, PALLAS, Zoog. Ross. As.

The Weasel.

DESCRIPTION.—Teeth : grinders 4 above, 5 below on each side. Upper part of the head, neck, and body, shoulders, exterior, and front of the fore-legs, and the whole of the hind-legs reddish brown, tinged with yellowish ; the under parts of entire body white ; a brown spot below each corner of the mouth. In northern countries, the whole animal becomes pure white in winter.

Length of head and body, 8 inches 3 lines ; head, 1 inch 9 lines ; tail, 2 inches 4 lines ; ears, 4 lines. The female is about one inch shorter than the male.

Inhabits all the northern parts of Europe ; is common in England, France, and all over Russia and Siberia. The Prince of Musignano includes it among the quadrupeds of Italy.

Mustela boccamela.

Mustela boccamela, BUON. Icon. Faun. Ital. vol. i. (figured); BECHSTEIN, Naturg. Deutschl. p. 819.

Mustela Altaica, PALLAS, Zoog. Ross. As.

DESCRIPTION.—Body above, legs, and feet fine chestnut; all the under parts white, with a slight sprinkling of reddish on the throat and breast; head chestnut-brown above, with metallic reflexions; whiskers long, whitish yellow; fore-feet white beneath, dappled with chestnut; tail furnished with stiff, long hairs, of the colour of the back; head depressed, wide; snout somewhat sharp, but the nose itself dilated; eyes large, oval; ears wide, rounded, open, folded on the outer margin; the lower jaw has one false molar, on each side, less than in *M. vulgaris*, which species, as well as *M. Erminea*, it much resembles.

Length of head and body, 8 inches 5 lines; head, 1 inch 11 lines; ears, 7 lines; tail, to the end of the hair, 3 inches 11 lines.

Feeds on mice, birds, and other small animals, and is extremely fond of honey, in search of which it enters beehives in gardens. Is easily tamed.

This animal, in Europe at least, is peculiar to the Island of Sardinia, as stated by Prince Buonaparte. Pallas is inclined to think that his *Mustela Altaica*, found in the Altai Mountains, is identical with it; this, however, being far from probable, requires proof.

Mustela Erminea.

Mustela Erminea, DESM. Mamm. Sp. 277; BELL, Brit. Quad.

Mustela Ermineum, PALLAS, Zoog. Ross. As.

The Stoat, or Ermine.

DESCRIPTION.—Teeth as in the Weasel, larger than that species, to which it is closely allied. Upper part of the

head, neck, and back, and most of the tail, reddish brown ; under parts white, tinged with yellow ; tail ending in a tuft of black hairs. In winter it becomes white, except the end of the tail, which continues black.

Length of the head and body, 10 inches ; head, 2 inches ; ears, 6 lines ; tail, 5 inches.

It is common in the British Islands, where it rarely becomes white in winter, except in the alpine parts of Scotland. Occurs in France, chiefly in the north, and is said to be rare in the south of that country. Is very common in Russia and Siberia, in Norway and Lapland, and may be said to inhabit the whole of Northern and temperate Europe, including the North of Italy.

Mustela lutreola.

Mustela lutreola, DESM. Mamm. Sp. 278.

Viverra lutreola, PALLAS, Zoog. Ross. As.

DESCRIPTION.—Teeth as in the Weasel ; toes of fore-feet united for half their length by a hairy membrane. Fur blackish brown, lighter round the ears ; upper lip and lower jaw white ; wool beneath the hair light brown ; long hairs black.

Length from end of nose to root of tail, 11 inches 8 lines ; tail, 5 inches 4 lines.

Lives on fish, frogs, cray-fish, &c. ; frequents rivers and brooks.

It is found all through the North and East of Europe, from the Icy Sea to the Black Sea ; is common in Finland, and is not rare in Russia, from St. Petersburg to the river Kama.

Mustela Foina.

Mustela Foina, DESM. Mamm. Sp. 281 ; PALLAS, Zoog. Ross. As.

Martes Foina, BELL, Brit. Quad.

Common Martin.

DESCRIPTION.—Teeth : grinders 5 above, 6 below on each side ; tongue smooth ; hair of two sorts, the shorter portion very fine and soft, pale ash-colour, the longer somewhat rigid, ashy at roots, dusky brown towards the ends, with a tinge of chestnut-red ; legs and tail dusky ; under parts somewhat paler than the upper ; neck beneath, and fore part of breast, white.

Length of head and body, 18 inches ; head, 4 inches 3 lines ; tail, 9 inches 6 lines.

Feeds on rabbits, rats, birds, &c., and produces 3 to 7 young at a time.

Not uncommon in the British Islands ; is found all over Western Europe ; occurs all through France, and in Italy ; inhabits nearly the whole of Russia, especially the temperate parts ; common in the Crimea and Caucasus.

Mustela Martes.

Mustela Martes, DESM. Mamm. Sp. 280 ; PALLAS, Zoog. Ross. As.

Martes Abietum, BELL, Brit. Quad.

Pine Martin.

DESCRIPTION.—Teeth : grinders 5 above, 6 below on each side ; tongue smooth ; much resembles the *M. Foina*, from which it differs in having the throat, neck beneath, and fore-part of breast yellow ; the head shorter ; the hair rather darker, and the legs a little longer. Fur much more abundant, finer and softer, and of a much richer colour. It is said to produce fewer young at a time than the last species, and to frequent more retired places.

Is found in Scotland, where it is rare ; in the mountains of the centre, south, and other parts of France, but not

commonly; in Italy, in the pine forests of the Apennines, near Ravenna, about Ostia, at Castel Fusano, as well as in other parts of that peninsula. It is not uncommon in the forests of the temperate parts of Russia, the Crimea, and Caucasus. Desmarest says that it exists over all the North of Europe.

Genus **LUTRA.**

Teeth.—Incisors, $\frac{6}{6}$; canines, $\frac{1-1}{1-1}$; molars, $\frac{5-5}{5-5}$ or $\frac{5-5}{6-6}$. Body long; feet short; toes five, webbed; head depressed; ears very short; tongue slightly rough; tail flattened. Habits aquatic.

Lutra vulgaris.

Lutra vulgaris, DESM. Mamm. Sp. 289; BELL, Brit. Quad.

Viverra Lutra, PALLAS, Zoog. Ross. As.

Common Otter.

DESCRIPTION.—Head broad and flattened; muzzle blunt; upper lip very thick and muscular, projecting over the lower; whiskers strong; eyes small; ears rounded, almost hid in the fur. Hair of body of two kinds, the shorter greyish white, the longer the same colour at the roots, deep brown at the ends, which last is the general colour of the body; sides of the head, throat, neck beneath, and breast ashy; feet reddish brown; tail dusky brown.

Length of head and body, 2 feet 3 inches; head, 5 inches; tail, $16\frac{1}{2}$ inches.

Feeds on fish. Lives on the banks of rivers and lakes. Swims very actively. Breeds in March, producing four or five at a birth.

Common in the British Islands, and all over Europe and Siberia.

Genus **CANIS.**

Teeth.—Incisors, $\frac{6}{6}$; canines, $\frac{1-1}{1-1}$; molars, $\frac{6-6}{7-7}$; the two last in each jaw tubercular. Tongue smooth; claws not retractile, five on the fore-feet, four on the hinder feet.

Subgenus 1. **CANIS.**—Eyes with circular pupils.

Subgenus 2. **VULPES.**—Eyes with linear pupils; tail bushy.

Subgenus 1. **CANIS.****Canis Lupus.**

Canis Lupus, DESM. Mamm. Sp. 293; PALLAS, SCHREBER.
The Wolf.

DESCRIPTION.—The tail straight; eyes oblique. Fur over the body tawny or yellowish grey, with a black streak on the fore-legs in adults; hair white at root, then ringed with black, fulvous, white, and pointed with black; ears erect; muzzle black; chin and upper lip white.

Length of head and body, 3 feet 9 inches; head, 10 inches 6 lines; ears, 4 inches 9 lines; tail, 1 foot 5 inches; 27 to 29 inches high at the shoulder.

Extinct in the British Islands, the last killed there being in Scotland in 1680, in Ireland in 1710. The female goes sixty-three days with young, and produces from five to nine at a birth. The Wolf varies both in size and shade of colour in the different countries of Europe; those of Russia and Scandinavia are said to be the largest; those of France browner and smaller than in Germany.

Found all over the Continent of Europe in extensive forests. Very numerous in many parts of France.

Canis Lycaon.

Canis Lycaon, DESM. Mamm. Sp. 294.
The Black Wolf.

DESCRIPTION.—In form resembles the common Wolf, except

that the eyes are smaller and further apart, and the ears longer. It is black all over; in size intermediate between the Wolf and Fox.

Desmarest says that "it inhabits the cold and mountainous countries of Europe." Pallas, 'Zoog. Ross. As.,' mentions a black variety of Wolf as very rare in Russia, but more common in parts of Silesia. In the 'Naturalist's Library,' vol. iv., the *Canis Lycaon* is said to be "the Wolf of Spain and of Southern Europe." Is found about Friuli and Cattaro.

In some of the mountains of Spain a very large powerful brown variety of *C. Lycaon* occurs. In France it inhabits the Vosges, Alps, Cevennes and Pyrenees, and has been taken in the Departments of the Somme and Maine-et-Loire.

Canis aureus.

Canis aureus, DESM. Mamm. Sp. 300.

Sacalius aureus, HAM. SMITH, Nat. Lib. vol. iv.

The Jackal.

DESCRIPTION.—Nose broad and dog-like; head covered with rufous and ashy-grey hairs tipped with black; ears rufous outside, white within; neck and back yellowish grey, with some shades of dusky; shoulders and thighs rufous red; under parts and limbs pale reddish yellow; inner toe of fore-legs high on the joint; tail straight, longer and more brushy than in the Wolf, its hairs 4 inches long, yellowish beneath, greyish above, and all tipped with black, which causes the ends to appear of that colour; tongue bordered with a row of warts; the four central incisors truncated.

Total length of body, 2 feet 1 inch; head, 6 inches; ears, 2 inches 9 lines; tail, 7 inches.

Associates in large companies. Burrows. Feeds on putrid flesh.

Is found in Europe, in the most southern parts of Russia,

in parts of Turkey in Europe, such as the Pindus Mountains, in the Morea, and extends to the islands of Guipona and Corzoca in the Adriatic. Very common in Asia Minor, up to Scutari and Smyrna, and in the north of Persia.

Subgenus 2. VULPES.

Canis Corsac.

Canis Corsac, DESM. Mamm. Sp. 301; PALLAS, Zoog. Ross. As.
The Corsac Fox.

DESCRIPTION.—Tail very long, reaching 3 inches beyond the feet; that and the upper parts of the body of a uniform reddish grey; limbs entirely reddish; end of the tail black; a small black spot 3 inches from the root of the tail above; all the under parts of the body yellowish white. Its size is not greater than that of the Polecat.

Length of body, 1 foot 8 inches; head, 5 inches 2 lines; ears, 2 inches 2 lines; tail, 10 inches; height at shoulder, 1 foot.—F. M.

Goes in large troops; burrows in the ground; feeds on birds and eggs, hiding what it does not eat; emits a fetid odour. The fur on the body becomes lighter in winter.

The Corsac is found, according to Pallas, not further west than the Volga, its head-quarters being the great deserts of Tartary.

Canis Vulpes.

Canis Vulpes, DESM. Mamm. Sp. 304.
Vulpes vulgaris, BELL, Brit. Quad.
The Fox.

DESCRIPTION.—Muzzle sharp; head rather large; ears erect and pointed; eyes oblique; tail very thick and bushy. Fur

thick and long; body above reddish brown; lips, lower jaw, fore part of the neck, abdomen, and inside of the thighs white; back of the ears blackish brown; a streak of the same colour from the corner of each eye to the nose; tip of tail white. Varies sometimes in size and colour.

Length of head and body, 2 feet 3 inches; head, 6 inches; ears, 4 inches; tail, 1 foot 4 inches.

Feeds on poultry, rabbits, and burrows in the ground. Brings forth three to six young at a birth.

Common all over the British Islands, and throughout Northern, Western, and Central Europe. The Prince of Musignano implies that this species of Fox is not known to him in Italy further south than Piedmont and Lombardy. Foxes, probably of more than one species, says Cook, are in great numbers all over Spain.

The var. A. *Canis alopes* of Schreber and Desmarest, *l. c.*, le Renard Charbonnier, has the fur thicker, and of a brighter red, than *C. Vulpes*; the feet darker, and the tail black at the tip. Is found with the Common Fox, but seems to prefer mountain districts. This is the most common race of Bavaria and Switzerland.

Var. B.—*Canis crucigera*, le Renard croisé d'Europe, of Desmarest, Crossed Fox of Lloyd's 'Scandinavian Adventures,' has the fur darker than in the Common Fox, with a black or very dark line along the back, across the shoulders, and down the fore-legs. Is often met with in Sweden, where it is distinguished from the Common Fox by its larger size, greater breadth of skull, larger eyes, thicker legs, and more bushy tail.

Var. C.?—The Black Fox. It would seem from Lloyd's account, *l. c.*, to be entirely black, and to be not uncommon in Scandinavia. Thought by Nilsson to be an accidental variety only of the *C. Vulpes*.

Canis melanogaster.

Canis melanogaster, BUON. Faun. Ital. (figured); HAM. SMITH, Nat. Lib. vol. v.

The Black-bellied Fox.

DESCRIPTION.—Differs from *Canis Vulpes* in having the throat, breast, belly, and inside of the thighs black, with a hoary appearance on the surface, arising from the circumstance of the tips of many of the hairs on those parts being white; the under part of the tail, which is very bushy and reaches to the ground, has a black streak throughout its entire length, and in mature individuals is white at the extreme tip, grisly at base, with ten or eleven blackish rings. All the parts of the body described as black become white in summer, a darkish shade, however, remaining on the breast; the fur on the head becomes much darker. The head is larger in proportion, equaling about one-third of the length of the body, that of the *C. Vulpes* being only equal to one-fourth; the paws of the fore-feet smaller in proportion to those of the hind-feet than in that species, and the whole animal rather inferior to it in size.

In its habits it resembles the Common Fox.

Frequents the whole of Continental Italy (excepting Piedmont and Lombardy), Sicily, and Sardinia, in which last island it is smaller. Very common about Rome, where it is the only species.

Canis Lagopus.

Canis Lagopus, DESM. Mamm. Sp. 305; PALLAS, Zoog. Ross. As. The Arctic Fox. Blue Fox.

DESCRIPTION.—Fur very long, thick and soft, ashy grey or uniform light brown in summer, white in winter. Head short; muzzle prolonged; ears velvety; paws covered with long hair; tail long and very bushy. Fur on the body about 2 inches in length. Young animal sometimes of a very dark

grey, sometimes yellowish white, or with a brown line along the back and over the shoulders. The fur is valuable.

Feeds on rats, hares, birds, &c. Burrows very deeply in the ground. Swims well.

Length about 2 feet; stands about 1 foot to top of shoulder.

Inhabits the shores of the Icy Sea, Iceland, and Spitzbergen. It abounds in the more Alpine regions of Norway and Sweden, and is sometimes met with in the very south of the latter country. Is found in the North of Russia.

Genus **VIVERRA.** CIVET.

Teeth.—Incisors, $\frac{6}{6}$; canines, $\frac{1-1}{1-1}$; molars, $\frac{6-6}{6-6}$; two tubercular grinders in the upper jaw, and one very large in the lower. Tongue rough; claws five, semi-retractile; nose dilated at its end; head long; body prolonged, low on the legs, provided with a pouch under the tail more or less deep, and in some species containing an odorous substance.

Subgenus GENETTA (Cuvier). Pouch rudimentary, being merely a hollow.

Viverra Genetta.

Viverra Genetta, DESM. Mamm. Sp. 314.

La Genette de France, BUFFON.

DESCRIPTION.—Legs short; the large glands under the tail secreting musky matter; ears elliptic, with a small lobe on the outer side, as in dogs and cats. Fur grey, marked with small black spots, some round, others long; tail with ten or eleven rings of a brown or black colour; round the muzzle and behind the nostrils black; end of the upper lip white; a white spot below the eye; inside of the ears whitish. Young animals have a violet tint on the body.

Length from tip of nose to root of tail, 1 foot 5 inches ; head, 3 inches.

Frequents the neighbourhood of streams, ascends trees, feeds on rats, mice, &c. ; is easily tamed.

Inhabits many parts of France, Poitou, the Department du Gard, and other districts of that country, as well as Spain and Barbary.

Genus **FELIS.**

Teeth.—Incisors, $\frac{6}{6}$; canines, $\frac{1-1}{1-1}$; molars, $\frac{4-4}{3-3}$ or $\frac{3-3}{3-3}$. In the upper jaw the molars consist of two false molars of a conical form ; one large tooth called the carnassial, and one small tubercular tooth, with its greatest length across the jaw. In some species this last is wanting. In the lower jaw are two compressed molars and a carnassial with two points ; no tubercular tooth. The canine teeth are very large. The tongue is covered with horny parts, directed backwards ; the claws are retractile.

Felis Manul.

Felis Manul, PALLAS, Zoog. Ross. As. vol. i. p. 20 ; KEYSERLING u. BLASIUS, Wirbelth. Europ. p. 61 ; SCHINZ, Europ. Faun. vol. ii. p. 509 ; DESM. Mamm. Sp. 357.

DESCRIPTION.—The tail is more than half as long as the body, cylindrical, hairy, with nine rings more or less distinctly marked, those nearest to the root tawny, those near the tip, and the tip itself, black. The general colour of the fur on the upper parts of the body pale, tawny, yellowish, with scattered dusky hairs, having black tips ; the top of the head and between the eyes thickly speckled with numerous black spots ; on each cheek are two parallel oblique black streaks ; whiskers in four rows, white, except two large black ones ; under parts of the body lighter

in colour than the upper ; throat white, turning to ashy on the breast ; a few black streaks on the hind legs near the feet ; ears short, wide, rounded, without tufts, almost destitute of hairs on the inside ; two maxillary teeth on each side of the upper jaw, the posterior being the largest ; three in the lower jaw.

Length of head and body, 1 foot 7 inches 3 lines ; tail, without the hair, 9 inches.

“ Is nearly allied to the *F. Catus*, which it closely resembles in its habits, but differs from it in colour, size, the length of the tail, and in the number of its molar teeth.”

Lives in caves and rocky holes (Pallas).

Inhabits the southern slopes of the Ural Mountains, and is common also through Central Asia.

N.B.—Pallas does not give the number of molars, but probably means to say that the *F. Manul* has only three upper molars, the *F. Catus* having four.

Felis Catus.

Felis Catus, DESM. Mamm. Sp. 366 ; PALLAS, BELL, Brit. Quad.
The Wild Cat.

DESCRIPTION.—Hair long and bushy, grey or brownish grey above, more or less tinged with yellow, beneath paler ; a black line down the middle of the back, with transverse parallel bars of the same colour over the flanks, thighs, and shoulders ; several narrow parallel black lines on top of the head between the ears ; lips black ; feet yellowish, the soles black ; tail ringed with black ; the tip black ; of equal thickness throughout its whole length, and, as it were, truncated at the end.

In the male, the length of head and body is 27 inches

9 lines; tail, 13 inches 6 lines. In the female, the head and body are 21 inches 3 lines; tail, 12 inches 4 lines.

It preys on birds, rabbits, &c.

In the British Islands, is confined to the wilder parts of Scotland, and, possibly, of Ireland; the last habitat, however, is very doubtful. It is found in all the great forests of Europe, but nowhere in numbers, according to Desmarest. Pallas says that it is not met with in Russia Proper, though common in the Caucasus. Crespon gives it as not uncommon in the Department du Gard; and it inhabits the forests of France generally.

LYNXES.

Felis cervaria.

Felis cervaria, TEMM. Monog. vol. i. p. 106; DE SELYS, Index des Mamm. d'Europe.

DESCRIPTION.—Tail shorter than the head; smaller at the tip than at the base; black for a large portion of its length towards the top; whiskers on the lips pure white; ear-tufts very short, or wanting. Fur very long and tufted, particularly on the legs and soles of the feet, very fine and silky, covered, in the young, with brown and black spots, in the adult with large and smaller spots of true black; hairs on the back about 2 inches long, clear grey at base, bright reddish in the middle, and silver-grey at the points; hairs which form the spots reddish at base, the rest of their length black; whiskers of the cheeks dull white, with a tuft of black hairs in the middle; a black semi-circular stripe runs from the posterior angle of the eye to the cheek, a black circle round the eye, and a black spot on the lachrymal region; the spots on the sides closer to each other than those on the back, those on the outside of the legs still closer and round; no spots on the inner sur-

face of the legs nor on the tibiæ; a few transverse bars on the base of the tail. Fur on the front of the neck, chest, and belly very long and white; on the outside of the ear a black angular stripe, from the extremity of which rises a very slender ear-tuft.

In the young, when about half-grown, the fur is a dirty yellowish white, with spots longer than wide, of rather darker yellow, more or less distinctly marked, and surrounded with reddish brown; on the outside of the legs are brown round spots; during the transition from the young to the adult state, the brownish-black spots are more numerous, often indistinctly marked, and more or less running into each other; the transverse lines of the tail are brown.

In an adult, the length of head and body is from 2 feet 9 inches to 3 feet; tail, from 7 to 9 inches; height at the shoulder, 2 feet 6 or 7 inches; from the eye to the nose a little more than 2 inches. In the young, the total length, including the tail, is about 2 feet 4 inches, or 2 feet 6 inches.—F. M.

This Lynx, according to Temminck, is *probably* a native of the North of Russia in Europe, but the skins which are sold at Moscow come from Siberia.

Felis borealis.

Felis borealis, TEMM. Monog. vol. ii. p. 109; DE SELYS, Index des Mamm.

DESCRIPTION.—Of smaller size than the last species; tail shorter than the head, blunt, and, as it were, truncated at the end; only the tip black; bristles of the lips composed of black hairs, and of hairs black below and white above; ear-tufts long; very long whiskers on the cheeks; muzzle blunt. Fur close, not as long as in *F. cervaria*, and coarser; legs and soles of the feet extremely hairy; fur without distinct spots; the hairs on the back nearly $1\frac{1}{2}$ inch

in length, dark brown for three-fourths of their length, ringed with brown and grey at their points; hairs on the sides grey at their roots, reddish brown at their centres, and whitish at their points; this arrangement produces a grey tinge over the body, varied with brown on the back, and with reddish white on the belly; neither the old nor young animals have any distinct spots; a black line more or less interrupted, formed by the meeting of the points of the hair, runs along the spine; the tail, which is reddish white, has a waved appearance, but is without spots or bars; the ears are edged with black, and surmounted by tufts about $1\frac{1}{2}$ inch long; a large black spot on the whiskers; chest, belly, and legs inside, dull white; the waved markings on the fur vary in different individuals, being a mixture of tawny and ash, or brown and dull white.

Length of head and body from 2 feet 2 inches to 2 feet 9 inches; tail, 5 inches; from eye to point of nose, $1\frac{1}{2}$ inch.—F. M.

Inhabits the Polar regions of Europe and Asia; is pretty common in Sweden and Norway, whence a number of their skins are exported. Lloyd, in his ‘Scandinavian Adventures,’ says that the “Northern Lynx” is the only species in those countries; they are generally found in pairs, and commit great ravages on the flocks; they chiefly frequent mountains and wooded districts.

Felis Lynx.

Felis Lynx, TEMM. Monog. vol. i. p. 110; DE SELYS, Index des Mamm.

The Lynx.

DESCRIPTION.—Body stout, placed high on the legs, which are very robust; head thick, round; ears pointed, ear-tufts long; tail as long as the head, quite black for nearly

half its length towards the tip ; four or five waved bars on the cheeks ; bristles of the lips white, springing from four or five black streaks ; without small anterior molars or false molars. Fur in summer short, rather longer in winter, equally thick all over the body ; the soles of the feet naked ; the toes furnished with short fur ; the coat in general deep reddish brown, marked with small spots of red-brown, which are oblong on the sides, and round on the legs ; all the lower parts of the body and the inside of the legs white, with small indistinct blackish spots ; the ear-tufts and outside of the ears, except an angular space of an ashy colour, black ; a whitish circle round the eyes, above them, running to the forehead on each side, a longitudinal white spot ; no black line on the spine ; the hairs of the fur are brown at base, with their points bright red-brown in summer, changing to whitish in winter.

In the young the fur is longer and less sleek, the coat duller, and the bristles of the lips generally half black and half white.

The skins of this species, which are exported from Russia, are of finer quality than those of the eastern parts of Europe.

In the full-grown animal the length of the head and body is 2 feet 7 or 8 inches ; tail, $7\frac{1}{2}$ inches ; height at shoulder, 1 foot $4\frac{1}{2}$ inches ; from the eye to the tip of the nose, 1 inch 9 lines.—F. M. Occasionally individuals are met with measuring two or three inches more than the above.

This is the Common Lynx of Europe, over the greater part of which it was formerly distributed. It is still found in woody and mountainous districts of Germany, Russia, Poland and Hungary. Is scarce in Switzerland (Tschudi). Occurs in Naples and other parts of Italy, and is probably the Lynx of the North and Central mountain ranges of Spain (Cook). In France it is now very seldom met with ; chiefly in the Alps and Pyrenees.

Felis pardina.

Felis pardina, TEMM. Monog. vol. i. p. 186; DE SELYS, Index des Mamm.

DESCRIPTION.—Tail short, but longer in proportion to the size of the animal than in the *F. Lynx*; ear-tufts very distinct; cheeks furnished with large whiskers; the coat and the whole of the tail covered with black spots. The fur is short, the woolly and silky hair being of the same length. All the upper parts of the body, the outer surface of the legs, and the base of the tail bright glossy red-brown, nearly the colour of the Caracal. The spots on the body jet black, rather longer on the back than on the sides and legs; on the base of the tail they are small and round; the nape of the neck is streaked with narrow lines of black, which also spread over the tawny fur of the face; the upper portions of the whiskers are a mixture of tawny and black, the lower portions pure white; the lips, front of the neck, the middle of the belly, and inner surface of the legs pure white.

In large well-grown individuals the length of the head and body is 2 feet $1\frac{1}{2}$ inch; tail, 5 inches 3 lines; from the eye to the end of the nose, 1 inch 9 lines.—F. M.

This species is readily distinguished from its congeners by its smaller size, long whiskers, the regularly black-spotted fur, pervaded by a reddish tinge, and by the black specks of the tail, which is without bars, and has not the black tip of the other species.

It inhabits some of the warmest regions of Europe. Is found in Portugal in the mountains, and has been killed a few leagues from Lisbon. Temminck believes it to exist in Sardinia and Sicily, as well as in Turkey, and in a great part of the Levant. It is given by Cook in his 'Sketches of Spain' as the Lynx of the Sierra Morena, in the south of

that country, with the remark that, in the specimens taken there, "the tail is very short," and that its chief food is rabbits and partridges.

Division III. AMPHIBIOUS CARNIVORA.

Genus **PHOCA.** SEAL.

Teeth.—Incisors, $\frac{6}{4}$, $\frac{4}{4}$, or $\frac{4}{2}$; canines, $\frac{1-1}{1-1}$; molars, $\frac{5-5}{5-5}$, with more than one root, a large point on the middle, with a smaller one in front, and two smaller ones behind; external ears either wanting or inconspicuous; feet formed for swimming, the hinder feet flattened and directed backwards; the toes enclosed within the skin.

Phoca vitulina.

Phoca canina, PALLAS, Zoog. Ross. As.

Phoca vitulina, DESM. Mamm. Sp. 375; BELL, Brit. Quad.

Calocephalus vitulinus, F. CUVIER.

The Common Seal.

DESCRIPTION.—Incisors 6 above, 4 below. The grinding teeth are placed obliquely, so that the hinder inner margin of one is in contact with the front outer margin of the next behind it. The body is elongated, diminishing from the chest to the tail; neck very short; head round; upper lip furnished with strong undulated whiskers; outer ears marked only by a small tubercle; eyes nearer to the ears than to the end of the nose; the claws of the hind-feet are longer than those of the fore-feet, the first claw of the fore-foot is the longest. Hair stiff and shining, concealing a short, soft, woolly fur. General colour yellowish grey, with spots of brown and blackish; belly pale. Produces one or two young at a birth.

Length of head and body from 3 to 5 feet; head about 8 inches.

Inhabits the coasts of the British Islands, Norway, Sweden, Russia (both on the north coast and Black Sea), the Mediterranean occasionally, Holland, and France. Taken in great numbers in Greenland.

A variety is found in the Caspian Sea, which is described by Pallas as showing the yellowish tinge in a greater degree, and the coat less spotted than in the ordinary breed. He relates that at one period 20,000 (!) of these animals were taken there annually, and that they were still very numerous.

The Common Seal inhabits the salt Lake or Sea of Aral, and the freshwater Lake of Baikal in Siberia. It is most likely that a closer investigation will show that several species have been erroneously united under the same denomination.

The Common Seal of the French coasts is said to differ either as a variety or species from that of Britain and the North of Europe.

Phoca Greenlandica.

Phoca Greenlandica, DESM. Mamm. Sp. 376; BELL, Brit. Quad.

Phoca dorsata, PALLAS, Zoog. Ross. As.

Phoca Oceanica, LEPECHIN.

Harp Seal, BELL, *l. c.*

DESCRIPTION.—Incisors 6 above, 4 below. The grinding teeth are arranged, not as in the last species, but in a straight series, with a small interval between them. The colour of the fur varies much with sex and age. In the first year it is nearly white, in the second year grey, then grey with darker spots, in which state the female appears to remain; in the fifth year the male has acquired its perfect clothing, which is greyish white, with a brown crescent-shaped mark across the back, the points of which are backward, and directed towards each other; the second claw

of the fore-foot is the longest; the muzzle is very prominent; the head depressed; whiskers grey, slightly compressed and undulated.

Length of head and body, 6 feet; circumference, 4 feet; length of cranium, 8 inches 3 lines.

This Seal has been taken at least two or three times in England and Scotland. It is found in the White Sea, and on the coasts of Lapland and Spitzbergen, but chiefly in Greenland, where it appears in great herds. Its oil is held in high esteem.

Phoca annellata.

Phoca annellata, SCHINZ, Europ. Faun. vol. i.

Phoca fœtida, KEYS. u. BLAS. Wirbelth. Europ.

Calocephalus discolor, F. CUVIER.

Calocephalus fœtidus, GRAY, Catalogue of Brit. Mus., Ringed Seal do. *l. c.*
Marbled Seal of HAMILTON, Nat. Lib. vol. vi. (figured).

DESCRIPTION.—This Seal has been decided by Baron Cuvier and Professor Nilsson to be a distinct species from *P. vitulina*, with which it was originally identified. The upper part of the body is wholly blackish brown, marked with tortuous and irregular lines of whitish grey, which form detached marbled spots; the under part is paler, and its greyish lines broader and yellower. In some individuals the whitish grey of the abdomen reaches up on the sides; in others, the markings on the back have a resemblance to the eye. The grinding teeth are three-pointed, and are arranged in the direction of the jaw, not obliquely as in *P. vitulina*.

Inhabits the coasts of the Baltic and Arctic Seas, and Iceland, and is supposed to have been in one instance captured on the French shore.

Phoca hispida.

Phoca fœtida, DESM. Mamm. Sp. 377.

Phoca hispida, SCHINZ, Europ. Faun.; HAMILTON, Nat. Lib. vol. vi.

Calocephalus hispidus, F. CUVIER; GRAY, Cat. Brit. Mus.

DESCRIPTION.—Incisors 6 above, 4 below. The head is short and round, the muzzle extending to about one-third of the whole head; whiskers white, with a few black hairs, sharp, compressed, and a good deal curved at their extremities; eyes small, pupil white, and the iris brown; the body is almost elliptical and slender; the back somewhat gibbous; belly flat, especially near the fore-paws. The hair is thick-set, somewhat erect, rather long, soft, and fine, with curly wool at its root; the colour on the back is brownish, intermixed with white spots, and on the abdomen white, with a few brownish spots. The young are almost without spots, with the back somewhat livid, and the belly white. The old males have a very strong and disgusting smell. The hairs of the coat, when dry, have a tendency to curve backwards.

Its length seldom exceeds $4\frac{1}{2}$ feet, more commonly 4 feet, with a perpendicular height of 10 inches.

It inhabits the North Sea, and more doubtfully the Baltic. In Greenland many thousands are taken annually for their oil and skins, which are exported to Europe.

Phoca barbata.

Phoca barbata, DESM. Mamm. Sp. 378; BELL, Brit. Quad.; SCHINZ,

Europ. Faun.; KEYS. u. BLAS. Wirbelth. Europ.

Calocephalus barbatus, F. CUVIER.

The Great Seal, BELL, *l. c.*; PENNANT.

DESCRIPTION.—Incisors 6 above, 4 below (Desmarest). The teeth are nearly similar to those of *P. vitulina*, but are not placed obliquely. The middle claw of the fore-foot is the longest, and the outer ones the smallest and shortest, an

arrangement peculiar to this species; the cranium is very broad at the back part, the forehead remarkably arched; muzzle broad; lips loose and full; whiskers with numerous bristles, strong but flexible, horny, slightly compressed, smooth and transparent; opening of the ears large; eyes large, the pupil round, the iris brown; body elongate, robust; back rounded. The colour, when young, is smoke-grey above, lighter beneath, darkening as the animal grows older, until at last it is wholly black.

The general length is about 10 feet, but some have been observed measuring 15 feet. It is the largest of European Seals.

Inhabits the Farn Islands off the north-east coast of England, and has been taken on the Scotch coasts, and in the Orkneys; on the west coast of Norway, and in Iceland; but is uncommon in all those localities. Is also found in Greenland.

Phoca Leporina.

Phoca Leporina, DESM. Mamm. Sp. 374; SCHINZ, Europ. Faun.; HAM-
MILTON, Nat. Lib. vol. vi.

Phoca albigena, PALLAS, Zoog. Ross. As.

DESCRIPTION.—Incisors 4 in each jaw (Desmarest). The head is elongated; the upper lip swollen and thick, like that of a calf; the whiskers strong and thick, covering the whole front of the lip; eyes blue, pupils black; the fore-paws are short and feeble, ending abruptly; the membrane of the hind-feet is not curved, but straight. The colour is a uniform dull white, with a tinge of yellow: it is never spotted; the hair erect, interwoven and soft, like those of a Hare, especially when the Seal is young; the skin is very thick.

Length, $6\frac{1}{2}$ feet. The dental formulary marks it as belonging to this genus. The above description is from the 'Naturalists' Library,' quoted from Lepechin. Desmarest,

in his 'Mammalogie,' gives the number of incisor teeth as four in each jaw.

The young of this species are said by Pallas to be as white as snow, and to shine like silver.

It frequents the White Sea, ascending the rivers with the tide, and is very plentiful; also Lapland, Spitzbergen, and the Northern Ocean to Behring's Straits.

N.B.—By Keyserling and Blasius, and by Gray in his 'British Museum Catalogue,' this Seal is made identical with *Phoca barbata*.

Phoca Monachus.

Phoca Monachus, DESM. Mamm. Sp. 372; SCHINZ, Europ. Faun.

Pelagius Monachus, F. CUVIER; KEYS u. BLAS. Wirbelth. Europ.

Phoca Monacha, PALLAS, Zoog. Ross. As.

DESCRIPTION.—Four incisors in each jaw, the outer ones the largest; molars thick and conical, with only minute points before and behind; the first claw of the fore-foot the largest; upper lip thick; bristles of the whiskers long and even; pupils of the eyes triangular; orifice of the ears very small, with no external appendage; body smooth, rounded. Hair rather short, very dense, and lying close to the body. When wet, the colour of the back, head, tail, and upper part of the paws is black; the belly, chest, under parts of the neck, tail and claws, muzzle, sides of the head, and over the eyes, greyish yellow; when dry, the blacker parts become lighter, and the lighter parts more yellow; above each eye are two bristly hairs; nails of the hind-feet only rudimentary; tail about 3 inches long, incapable of motion; is very intelligent, and easily tamed.

Length of head and body, 10 or 12 feet.

The most common species of the Mediterranean, but does not appear to be anywhere numerous; is occasionally taken on the south coast of France and Piedmont; on the coasts

of Greece, Dalmatia, and various parts of Italy, Corsica, the Balearic Islands, Spain, and Barbary. Is also found in the Black Sea.

Phoca cristata.

Phoca cristata, DESM. Mamm. Sp. 371 ; GÉRAVIS, Zool. et Paléont. Franc. with figure, pl. 42.

Cystophora cristata, GRAY, Cat. Brit. Mus.

Stenmatopus cristatus, F. CUVIER ; KEYS. u. BLAS. Wirbelth. Europ. Hooded, or Crested Seal.

DESCRIPTION.—Incisors, $\frac{4}{2}$; canines, $\frac{2}{2}$; molars, $\frac{5-5}{5-5}=30$ in all (see Gervais, *l. c.*, and Nat. Lib. ed. 6). [Desmarest, however, gives 4 incisors in each jaw, making the total number of teeth 32.] The middle incisors are very small, the grinding teeth have their cutting portions marked by three lobes, and many small indentations ; the back and all the upper surface of the head, body, tail, and feet bluish grey when dry, slate-brown when wet, contrasting conspicuously with the yellowish white of the parts beneath. In the adult male the anterior part of the head is covered by a tuberculous body, like an inflated bladder, which is wanting in the females and young. The general colour becomes darker with age, in old individuals the upper parts being almost black, with grey spots ; the males have, in addition to the true nostrils, two spurious tubercular ones, single or double, according to their age ; the first claw of the fore-foot is the longest.

Length of full-grown animals, 10 to 12 feet.

Inhabits the North Atlantic ; has been taken once, in 1843, on the Isle d'Oleron, west coast of France ; is very abundant in Greenland, whence large quantities of the skins are imported to Europe ; one was taken in the Orwell, at Ipswich, in 1847.

Phoca gryphus.

Phoca gryphus, SCHINZ, Europ. Faun. vol. i.

Halichærus griseus, NILSSON, Skand. Faun.

Halichærus gryphus, BELL, Brit. Quad.; KEYS. u. BLAS. Wirbelth. Europ.

DESCRIPTION.—Incisors, $\frac{6}{4}$; grinders, $\frac{5-5}{5-5}$; those in the upper jaw simple, the first being very small and single-pointed, with the points slightly recurved; the three following of nearly the same form, but larger; the fifth have a minute rudimentary tubercle at the back part; in the lower jaw the first and third are similar to those in the upper jaw; the second broad, with a rudimentary tubercle before and behind; the fourth and fifth with the tubercles distinct; in the fore-feet the first toe is the longest; in the hind-feet, also, the first is the longest, then the fifth, the second, the fourth, and the middle one, which is the shortest; the muzzle is very deep and obliquely truncated; head very flat; the face bears a larger proportion to the cranium than in the other species; in the adult the hair is much recurved, and the animal, when dry, with the head turned towards the spectator, appears of a uniform silvery grey, whilst viewed in an opposite direction it appears altogether sooty brown, the spots or blotches being only visible on a side view. Very young animals are dull yellowish white, with rather long hair, which, after about a month, falls off, giving place to a more shining coat, blotched with blackish grey; as the animal advances in age, the blotches become less distinct on the upper parts, while on the breast and lower parts they sometimes show as distinctly as in the Leopard.

Length, upwards of 7 feet.

The shape of the head and characters of the teeth differ so much from the other species of this genus, that Professor

Nilsson has placed this Seal in a genus of its own, in which he has been followed by Bell and others.

It inhabits the North Sea and the Baltic; has been taken a few times on the coast of England; oftener on the south coast of Ireland.

Genus **TRICHECUS.** WALRUS.

Two incisors in the upper jaw only while young; no incisors in the lower jaw; canines in the upper jaw only, very long, and directed downwards; grinders, $\frac{4-4}{4-4}$ or $\frac{5-5}{5-5}$, obtuse and simple; the head round; muzzle much swollen; no external ears; the fore- and hind-feet in their general form like those of the Seals.

Trichecus Rosmarus.

Trichecus Rosmarus, DESM. Mamm. Sp. 388; BELL, Brit. Quad.

Rosmarus arcticus, PALLAS, Zoog. Ross. As.

Walrus.

DESCRIPTION.—The head is comparatively of moderate size, very obtuse, and tumid in front; the bristles of the whiskers flattened, being nearly a line in breadth at their origin; two canine teeth in the upper jaw of enormous dimensions, directed downwards, measuring from 8 inches to 14, and in very old males even exceeding 2 feet; the incisors and a fifth molar in each jaw are early deciduous; no external ears; the orifices placed far back on the head; the body is very thick about the chest, becoming partially smaller towards the tail, as in the true Seals, but its bulk is greater in proportion to its length than in those animals; neck and tail very short; the skin is smooth, very thick, blackish, with a few short, stiffish brown hairs, principally on the feet; hind-feet very broad; total length, about 11 feet.

The female brings forth in winter, producing only one young at a birth, about the size of a pig of a year old.

The Walrus has, in two instances at least, been taken on the Scotch coasts. It inhabits the northern frozen seas, is especially numerous at Spitzbergen; is found in Iceland and Greenland, generally associating in herds.

Order RODENTIA.

Two large incisors in each jaw, remote from the molars; no canines; toes distinct, with conical claws of small size.

Division I. RODENTS PROVIDED WITH PERFECT CLAVICLES.

Genus **CASTOR**. BEAVER.

Teeth.—Incisors, $\frac{2}{2}$; molars compound, with flat summits, $\frac{4-4}{4-4}$. Toes of the hind-feet palmated; tail oval, depressed, and covered with scales.

Castor fiber.

Castor fiber, DESM. Mamm. Sp. 432.

Common Beaver.

DESCRIPTION.—Head short and thick, somewhat flattened at the top; muzzle blunt; eyes small and black; ears short, rounded at the ends; neck short; body thick, very convex on the back; tail depressed, broad, oval, the surface naked and scaly. Fur composed of two sorts of hairs, the one short, thick, fine and soft, the other long, rather stiff and elastic; the general colour of the animal is deep chestnut-brown, smooth and glossy on the upper parts, duller beneath.

Length of head and body, 2 feet 6 lines ; head, 5 inches ; tail, 1 foot ; breadth of tail, 4 inches 2 lines ; some individuals attain the length of 3 feet.

Lives solitary or in pairs ; burrows in the ground on the banks of large rivers, differing in these respects from the American Beaver.

It is still found, though in greatly reduced numbers, in several rivers of the northern and central countries of Europe, such as the Danube, Rhine, and Rhone, on which last it is recorded (by Crespon) as occurring from Pont St. Esprit to the sea, especially among willow plantations, on which it sometimes inflicts serious injury. Is rather rare in Russia, except on the Dwina and Petschora ; is numerous in Siberia, Tartary, and the Caucasus (Pallas).

Genus **ARVICOLA.** VOLES.

Teeth.—Incisors, $\frac{2}{2}$; molars, $\frac{3-3}{3-3}=16$; molars deeply sulcated outside, pressed so closely together that the divisions between them are not easily seen. Muzzle blunt ; toes separate ; tail round and hairy, shorter than the body ; no cheek-pouches ; fore-feet with four claws, having nails, and the thumb consisting of either a mere tubercle or a very small nail ; hind-feet with five toes armed with nails, the thumb very small ; eyes small or moderate. Burrows in the ground.

Arvicola amphibius.

Arvicola amphibius, DESM. Mamm. Sp. 435 ; BELL, Brit. Quad. ; DE SELYS, Micromm.

Lemmus aquaticus, F. CUVIER.

Water Vole, Water Rat.

DESCRIPTION.—Tail blackish, lighter beneath, rather longer than half the body, with upwards of 110 scaly rings ; ribs, thirteen pairs. Fur dark brown, more or less rusty above,

mixed with grey, becoming slightly reddish on the sides of the head and body, some longer blackish hairs on the back, especially on its lower portion; parts beneath dark grey, with a tinge of red on the belly; ears shorter than the fur, and hidden by it, naked, but edged with hairs at tip; eyes very small and deeply set; muzzle greyish; the hairs of the upper lip dirty white; feet very strong, scaly, clothed with short stiff hairs. In young animals the colour above is yellowish brown, and there is no reddish tinge below.

The following varieties have been observed:—

Var. A.—White with red eyes (Albino).

Var. B.—Black, the *A. ater* of Macgillivray, found in Cambridgeshire, and in Scotland in Banff and Aberdeenshire, as well as by Pallas in Siberia.

Var. C.—Smaller, darker above; beneath tinged with chestnut and not with red; the whole of the tail deep chestnut. According to M. de Selys Longchamps, this variety is the *A. amphibius* of Buonaparte, in his ‘Fauna Italica,’ and the *A. amphibius*, var. *Italica* of Savi. It is found in the marshes of Tuscany, and about Ostia and the banks of rivers near Rome. Is common in Italy.

Var. D.—Pale dirty yellow, a large irregular white spot over the shoulders, and often a line of the same colour on the breast. Observed by Pallas on the banks of the Obi, and may prove to be a distinct species, in which case it would not find a place in the European list.

Length of head and body, 6 inches; tail, 3 inches 4 lines; ears, $5\frac{1}{2}$ lines.—F. M.

Frequents the edges of ponds and rivers, marshy fields and meadows. Breeds thrice in the year, producing six or eight young at a birth.

The *A. amphibius* inhabits nearly the whole of Central and Northern Europe. It is found in England and Scotland, but, like all the other species of Voles, is unknown in

Ireland. In France it is not rare in the south, and is found in many rivers, lakes, and ponds throughout that country. Is unknown in the greater part of Switzerland, being replaced by the *Arvicola terrestris*. Very common in Russia, from the White Sea to the Caspian. In Italy the variety C. alone has been observed. Is found in Silesia.

Arvicola nivalis.

Arvicola nivalis, BLASIUS, Wirbelth. Deutschlands, p. 359.

Arvicola Lebrunii, CRESPO, Faun. Mérid. vol. i. p. 77.

Hypudæus alpinus, WAGN., SCHREBER, Saugth. Supplement, iii. 1843.

DESCRIPTION.—Tail somewhat more than half the length of the body, greyish white, darker above, with brown scaly rings; body above brown-grey, lighter on the sides, with numerous yellowish-white hairs intermixed, and nearly white beneath; sometimes they are bright yellow-grey above on the back, and the feet and tail are sometimes white; the ground of the fur near the roots is everywhere dark, the varieties of shade depending upon the colours of the tips of the hairs; the hairs of the back are almost always observed, when exposed to sunshine, to have a metallic violet-blue hue; the ears are almost half as long as the head, but scarcely rise above the fur; they are covered with fine whitish-grey hairs outside, and along their front edges are furnished with long hairs. Teeth sixteen in number. The fur is generally thick and fine.

Total length, 7 inches 2 lines; ear along the outer edge rather more than 6 lines; tail, 2 inches 6 or 7 lines.—F. M.

This is a truly Alpine species, being strictly confined to mountain ranges, and is never found in the Alps at a lower elevation than 3000 feet, seldom so low as 4000 feet, and thence upwards to the limits of perpetual snow, and even far above the snow-level on bare spots, where it stays all

the year through, burrowing under the snow in search of stunted Alpine plants. It has been taken on the top of the Finsteraarhorn, 12,000 feet above the sea, and on other equally elevated spots. Is found commonly in the Central, Northern, and Southern Alps, and indeed belongs to the whole of that mountain chain. Is said to have been found in the Pyrenees on the Pic du Midi.

If this species is identical with Crespon's *A. Lebrunii*, as Blasius surmises, it must inhabit the plain country around Nismes; those taken there by Crespon were found to resemble the *A. socialis*, except in their larger size. I conceive, however, that this French habitat is very doubtful.

Arvicola destructor.

Arvicola destructor, DE SELYS, Micromm.

Arvicola terrestris, BUON. Faun. Ital. (figured).

DESCRIPTION.—Tail brown, longer than half the body. Fur of the upper parts of the body yellowish brown, mixed with grey, a good deal like that of the back of the Norway Rat (*M. decumanus*); sides rather lighter; throat and breast whitish ash; abdomen ashy, very slightly tinged with yellow; end of the muzzle and of the upper lip the same colour as the back; lower lip the colour of the throat; snout swollen and blunt at its extremity; ears and eyes as in *A. amphibius*; the fur of the back is still more linear than in that species, and mixed with longer and darker hairs; the tail is a little longer in proportion, containing about 135 rings, and covered with short stiff hairs, dark on the upper surface, light grey underneath. There is a marked difference in the shape of the skull between this species and all its congeners.

Length of head and body, 6 inches; head, 1 inch 6 lines; tail, 3 inches 9 lines; ears, 4 lines.—F. M.

Has only been observed in Italy, where it occurs in the

neighbourhood of Pavia and Milan. Is common near Rome and in Tuscany; in the Maremme of the latter country it is very abundant. In the province of Piombino these Voles appeared in such numbers in the spring of 1837, and again in 1838, as seriously to injure the crops.

Arvicola terrestris.

Arvicola terrestris, DE SELYS, Micromm.

A. argentoratensis, DESM. Mamm. Sp. 436.

Campagnol Schermans, DE SELYS, *l. c.*

DESCRIPTION.—Has thirteen pairs of ribs. Fur yellowish brown, dark on the back, lighter on the sides of the head and body, on which parts the yellow tint becomes more decided, never passing into red as in *A. amphibius*, of equal length, without long hairs on the back; body beneath rather light ashy, very slightly tinged with pale yellow on the abdomen; tail a little more than one-third of the length of the body, covered with short hairs, brown above, lighter beneath; the feet are also covered with very short whitish hairs; eyes very small, black; ears as in *A. amphibius*, but the snout thicker and blunt; it differs also from that species in the form of the skull. Its habits are the same. White and black varieties have been met with.

Length of head and body, 5 inches; head, 1 inch 2 lines; tail, 2 inches; ears, $3\frac{1}{2}$ lines.—F. M.

Has been found near Strasburg and in the East of Germany. In Switzerland, especially near Zurich; it is there sometimes called “the Wurtzelmaus.”

Arvicola ratticeps.

Arvicola ratticeps, BLASIUS, Wirbelth. Deutschlands, p. 365.

DESCRIPTION.—Teeth 16 in number. Ears nearly half as long as the head, their upper portion on the outside covered

with fine hairs of brown-grey, mixed with others of a rusty yellow shade; the tail, which is more than one-third of the body in length, is not narrowed near the base; it is clothed above with small dark brown hairs, beneath with white hairs tipped with grey. The fur of the body is dark rusty brown above, light grey with a yellowish tinge on the sides, and underneath a decided white, contrasting with the darker colour of the sides; the tips of the hairs on the back have a metallic gloss. The young animals are duller in colour than the adults. The head is more lengthened than in the other species, being shaped like that of the Rat.

Entire length, 6 inches 7 lines, exclusive of the tail, which is 1 inch 10 lines.—F. M.

Found by Professor Blasius in 1840 in the North of Russia, on the Dwina; has been obtained also from Norway, the Baltic Provinces of Russia, and from Siberia, as well as from Southern Russia.

Arvicola Savii.

Arvicola Savii, DE SELYS, Micromm.

Arvicola incertus, DE SELYS, 1840; P. GERVAIS, Zool. et Paléontol. Franc.

A. arvalis, BUON. Faun. Ital. (figured).

DESCRIPTION.—With fourteen pairs of ribs, shaped like *A. arvalis*. Ears much shorter than the fur, which is of an earthy greyish-brown colour above, and ashy beneath; in some individuals the head and back are obscurely red-brown; the snout is thick and blunt; eyes very small; tail rather less than one-third of the length of the body, hairy, brown above, whitish below; feet greyish white, with rather strong nails; the thumb less rudimentary than in *A. arvalis* and the other nearly allied species. The teats are four in number, none of them pectoral.

Length of head and body, 3 inches 5 lines ; head, 1 inch ; tail, 10 lines ; ears, 2 lines.—F. M.

In its habits it much resembles the *A. arvalis*, the common Short-tailed Field-mouse of England and the North of Europe, and is equally numerous and destructive. The Prince of Musignano relates, that on one farm alone, in the neighbourhood of Rome, 11,000 were killed in a single season.

It is the only species among the lesser Voles which has been observed in Italy. De Selys Longchamps, as quoted by Gervais, 'Zool. et Paléontol. Française,' says that the "*A. Savii*, as *A. incertus*, is found in Provence (Var) and Languedoc, at Montpellier." M. Crespon has found both *A. Savii* and *A. incertus* in the Gard, and considers them to be distinct species (see his 'Faune Méridionale'); the former is very abundant there in cultivated plains.

Arvicola subterraneus.

Arvicola subterraneus, DE SELYS, Micromm.; BLASIUS, Wirbelth. Deutsch.

Lemmus pratensis, BAILLON.

DESCRIPTION.—Rather less than *A. arvalis*. Ears a little shorter, as long as the fur, almost naked, surrounded at base by long hairs, which, in the live animal, almost conceal them ; eyes very small, less than in *A. arvalis* ; tail rather less than one-third of the length of the body, covered with blackish hairs above, with white or whitish beneath. Fur almost entirely of different shades of greyish black, except on the throat, which is dark ash ; and on the belly, where they are ash tipped with white. In some specimens the hairs beneath the body are earthy brown at their tips, thus resembling some individuals of *A. arvalis* ; but they never, like the latter, have a tinge of yellow on the

sides; the feet are dark ash; snout thick, blunt; four teats, none of them pectoral. The fur of *A. subterraneus* above is of the colour of the Common Mouse (*M. musculus*), while that of *A. arvalis* is more like the Brown Rat (*M. decumanus*). The very young are black all over, with a slight blue tint, and the skin of the ears is white.

Length of head and body, 3 inches 4 lines; head, $11\frac{1}{2}$ lines; ears, 4 lines; tail, 1 inch.—F. M.

Inhabits Belgium, French Flanders, and the neighbourhood of Paris; and has not yet been found in any other country (De Selys, 1839).

Arvicola arvalis.

Arvicola arvalis, DE SELYS, Micromm.

Arvicola vulgaris, DESM. Mamm. Sp. 439.

Arvicola agrestis, BELL, Brit. Quad.

Mus agrestis, LINNÆUS.

Short-tailed Field-mouse, BELL, *l. c.*

Le Campagnol, BUFFON.

DESCRIPTION.—Tail about one-third of the length of the body, sparingly covered with hairs of a dirty yellow colour; ears just appearing above the fur, clothed with short yellowish hairs; head large; muzzle very obtuse; body thick and full; the thumb of the fore-feet rudimentary, without a claw; feet covered with short stiff hairs; teats 8 in number, of which 4 are pectoral. Colour of the fur on the upper parts reddish brown mixed with grey, of the under parts ash-colour. Varieties occur of white, yellowish white, speckled, and black.

Length of head and body, 4 inches 1 line; head, 1 inch 2 lines; ears, 5 lines; tail, 1 inch $3\frac{1}{2}$ lines.

Is extremely prolific, and when in numbers inflicts serious damage on grain, seeds, and roots.

Very common in England, all over France, Belgium,

and Russia, in all grassy districts ; and is found over nearly the whole of Europe, excepting Italy. It is the *Mus agrestis* of Linnæus, which he records as a native of Sweden, where it is rather darker in colour, and the tail of a deeper shade above than below (see Ann. Nat. Hist. vol. vii. 1841, p. 270 (Jenyns) ; De Selys, 'Micrommalogie,' p. 104).

Arvicola socialis.

Arvicola socialis, DESM, Mamm. Sp. 447.

Mus socialis, PALLAS.

DESCRIPTION.—Tail rather less than one-fourth of the body, whitish, very hairy ; ears rather large, as long as the fur, almost naked ; feet white. Fur on the upper parts very soft, even, more than five lines in length, of a pale grey, becoming lighter on the sides, pure white beneath ; light tawny on the muzzle, which is obtuse ; whiskers white. The head is rather smaller than in *A. arvalis*. Feeds on roots and bulbs.

Length of head and body, 3 inches 5 lines ; head, 1 inch 1 line ; ears, $4\frac{1}{3}$ lines ; tail, $10\frac{1}{2}$ lines.—F. M.

Inhabits the deserts between the Volga and Jaik near the Caspian Sea.

Arvicola rubidus.

Arvicola rubidus, DE SELYS, Micromm.

Arvicola pratensis, BELL, Brit. Quad.

Arvicola glareolus, BLASIUS, Wirbelth. Deutsch.

Bank Vole, BELL, *l. c.*

DESCRIPTION.—Tail rather more than half the length of the body, covered with short hairs, blackish above, yellowish white beneath, concealing the scaly rings, which are about ninety in number ; ears rather large, slightly oval, longer than the fur, furnished with small reddish hairs ; eyes prominent, but less so than in *A. arvalis* ;

feet dirty white. Fur on the upper parts of the body rusty red, ash-grey on the sides, more or less bright according to the season, the hair being tipped with blackish ; under parts whitish, tinged with bright red-brown when in a perfect state. In young animals this red colour appears strongly only on the top of the head and on the middle of the back, the rest of the upper part of the body being largely mingled with dark ash ; has thirteen pairs of ribs.

Length of head and body, 3 inches 2 lines ; head, 1 inch ; ears, 5 lines ; tail, 1 inch 11 lines.—F. M.

Has been found in a few places in England ; in the North and centre of France near Lyons. In Belgium it is spread nearly all over the country, in damp woods near streams ; also throughout the greater part of Germany, Hungary, Denmark, Croatia, and Southern Russia to the Ural Mountains, as well as in Moldavia.

Arvicola incertus.

Arvicola incertus, DE SELYS, Revue Zool. 1843 ; CRESPON, Faun. Mérid. 1844 ; P. GERVAIS, Zool. et Paléon. Franc. 1852.

DESCRIPTION.—Fur on the upper parts reddish brown, inclining to yellowish ; cheeks and flanks of the same colour ; all the lower parts and the legs dark ash-colour ; toes furnished with small whitish hairs ; nails reddish ; tail brown above, lighter beneath, with a small tuft of hairs at its extremity ; ears velvety on the outside, hidden by the fur ; muzzle blunt, very hairy ; whiskers of medium length, whitish ; eyes small, black. The fur of the body is soft to the touch ; the hairs are slate-colour from the base to two-thirds of the entire length.

The head and body measure 9 centimetres ; the tail 4 centimetres (Crespon).

M. de Selys Longchamps inclines to consider this animal as a variety of *A. Savii*, but M. Crespon and M. Gervais

are of opinion that the two species are distinct. Both it and *A. Savii* are found in the Department du Gard, where the former zealous naturalist has had many opportunities of comparing them. It is not nearly so abundant, however, as the latter. In general aspect, the *A. incertus* differs from *A. Savii* in being thicker and shorter; it frequents marshy places, whereas the latter prefers the fields of Lucerne.

Genus **LEMMUS.**

Teeth.—Incisors, $\frac{2}{2}$; molars, $\frac{3-3}{3-3}=16$; upper incisors convex in front, and without furrows; lower ones pointed; molars composite, without tubercles even at top; ears very short, rounded; eyes very small; fore-feet with four or five toes armed with claws, and formed for burrowing; hind-feet with five toes; tail very short, covered with hair. This genus is closely allied to *Arvicola*, differing from it chiefly by the position of the fore-feet, and by the shortness of the tail.

Lemmus Norvegicus.

Lemmus Norvegicus, DESM. Mamm. Sp. 450.

Mus Lemmus, LINNÆUS.

Myodes Lemmus, PALLAS, Zoog. Ross. As.

The Norway Lemming.

DESCRIPTION.—Fur tawny, red-brown, varied with black and brown; front feet with five claws; head short, thick, oval; muzzle very blunt; eyes very small; ears small, hidden by the fur, rounded; claws very short, especially those of the fore-feet. Fur of the body very soft, nine lines in length; end of nose whitish; top of head deep black; a black streak extends from the eye to the ear. In old animals there is a crescent of yellowish and dirty white on the back of the head; a long black streak from

the neck to the middle of the back, the rest of the back is dark tawny or yellowish; sides of the head, throat, and lower parts of the body white; sides light yellow, passing to whitish towards the belly; hairs of the tail long and thick, of a whitish-grey colour; feet of the same colour; claws of the fore-feet very much flattened at the sides, the four outer ones hooked, that of the thumb very thick, and truncated obliquely.

Length of head and body, 5 inches 3 lines; head, 1 inch $5\frac{1}{2}$ lines; ears, 4 lines; tail, 7 lines.—F. M.

Very prolific. These animals collect in vast numbers at uncertain periods, and migrate from the mountains to the plains, destroying every vegetable substance that lies in their path. They burrow in the ground, but do not become torpid in winter. The Norway Lemming inhabits the mountains of Norway and Lapland, especially those parts where dwarf-birch and willow abound; and visits parts of Sweden in its migrations.

Var. A. of Desmarest, Mammal. from Pallas, Nov. Spec. Glir. tab. 12 B, *Lemming de Lapponie*. Smaller by one-fourth than the preceding. A brown stripe or band, beginning at the muzzle, surrounds the eye and runs towards the ear; a similar stripe on the top of the head; throat white; back covered with tawny hair, with scattered blackish hairs intermixed; the back of the head or neck is slightly brown, some yellowish on the sides, and dull white on the belly.

Found only in Russian Lapland. Desmarest considers it as a distinct species, but has followed Pallas in placing it as a variety of *L. Norvegicus*.

Lemmus torquatus.

Lemmus torquatus, DESM. Mamm. Sp. 454; DE SELYS, Index des Mamm.

Myodes torquatus, PALL. Zoog. Ross. As.

DESCRIPTION.—Fur rusty brown, with a black dorsal line and a white collar, interrupted beneath; five toes on the fore-feet; claws moderately strong, simple; the claw of the thumb short and rounded; resembles a good deal in its general form the *L. Norvegicus*; feet rather short and strong, especially the fore-feet; tail very short and hairy, brown, except at its extremity, which is white; the end of the nose divided by a very narrow furrow. The fur, which is very fine and soft, is varied with rusty brown, or greyish yellow, and brownish above; the belly, and all the parts beneath, dirty white; feet white mixed with brown; nose velvety and black, which colour runs up the centre of the face to the forehead; cheeks whitish, with black moustaches as long as the head; behind each ear is a patch of chestnut-brown, and beyond this one of dull white.

Length of head and body, 3 inches 1 line; head 1 inch; tail, including the hair, 7 lines.—F. M.

Found within the Arctic Circle, and in the most northern parts of Siberia, and (according to De Selys Longchamps) on the shores of the White Sea.

Lemmus migratorius.

Lemmus Obensis, BRANDT.

Arvicola Obensis, SCHINZ, Europ. Faun. vol. ii. p. 509.

Myodes Obensis, KEYS. u. BLAS. Wirbelth. Europ. No. 35, p. 32.

Mus Lemmus, var. *Sibirica*, *Laponica*, *Obensis*, PALLAS, Nov. Spec. Glir.

DESCRIPTION.—No distinctly marked dorsal line. Fur on the upper parts of the body a uniform brownish-yellow colour, with black hairs interspersed; sides light yellowish;

parts beneath, and legs pale rust-colour; throat white; feet and toes whitish.

Inhabits Russia, within the Polar Circle.

N.B.—This may prove to be identical with the *L. Norvegicus*, var. A., or *Lemming de Lapponie* of Desmarest, described in this Manual.

Lemmus lagurus.

Lemmus lagurus, DESM. Mamm. Sp. 455; DE SELYS, Micromm.

Myodes lagurus, PALLAS, Zoog. Ross. As.

DESCRIPTION.—Fur ash-grey, with a black dorsal line; no collar; five toes on the fore-feet; claws rather weak; the thumb a horny tubercle; muzzle very blunt; lips rather swollen; ears apparent, rounded; eyes moderate; legs rather slender; tail very short, hairy, and truncated. Fur fine and soft, about five lines in length on the upper parts, which are pale ash-colour, mixed with some brown hairs; the dorsal line begins between the eyes, and runs to the root of the tail, and is rather wider in the centre than at the extremities; the feet and the under parts of the body are dull ashy and whitish; whiskers whitish, shorter than the head, arranged in five rows. In young animals the general colour is lighter than in adults.

Length of head and body, 3 inches $7\frac{1}{2}$ lines; head, 1 inch; ears, 3 lines; tail (including the hair) in the male 6 lines, in the female $4\frac{1}{2}$ lines.—F. M.

Migrates, like the Norway Lemming, in vast multitudes, feeding chiefly on bulbs; but also eats flesh, and even devours its own species (Pallas).

De Selys Longchamps, 'Index des Mammif. d'Europe,' gives Eastern Russia and Russian Lapland, as well as the River Jaïk, as its habitats; Pallas says that it is found from the Jaïk to the Irtisk; Desmarest, that it is very common in the deserts of Tartary.

Genus **MUS**.

Upper incisors rather short, wedge-shaped ; lower ones long, compressed, curved, and very sharp ; molars simple, with tubercular summits, their length and breadth nearly equal ; muzzle elongated ; ears oblong or rounded, often naked ; eyes prominent ; front feet with four claws and a thumb, which is very small, and little more than a tubercle ; hind-feet with five claws ; tail, almost in every case, either as long as, or longer than the body, rounded, composed of numerous scaly rings, with short stiff hairs between them. Most of the species are vegetable feeders, but some feed also on animal substances.

Mus decumanus.

Mus decumanus, DESM. Mamm. Sp. 473 ; BELL, Brit. Quad.
Norway Rat. Brown Rat.

DESCRIPTION.—Tail shorter than the body, with rather more than 200 rings ; colour of the upper parts greyish brown, with a tawny tint, resulting from each hair being dusky grey at the roots, and yellowish brown at the tip ; a few stiffish blacker hairs are scattered among the others ; under parts dirty white. The fur is generally rough, *i. e.* not lying smoothly close to the body ; ears as broad as long, rounded at the extremities, almost naked, one-third of the length of the head.

Length of head and body, 11 inches ; head, 2 inches $4\frac{1}{2}$ lines ; ears, $8\frac{1}{2}$ lines ; tail, 8 inches 4 lines.

Breeds several times in the course of the year, producing ten, twelve, or even fourteen young at a birth ; its voracious habits are well known, there being scarcely any animal or vegetable substance which it will not devour.

Was first observed in Europe, in the South of Russia, about the year 1727, having come from the neighbour-

ing part of Asia by Astrachan; first introduced to England and France about 1730, since which period it has spread not only over the European continent, but has reached America and almost every part of the world frequented by European shipping. Pallas, who travelled in Siberia in the year 1770, says, that it had not at that time reached that country; Cetti, that it is still unknown in the Island of Sardinia.

A Black Rat, with the toes white and an elongate white spot beginning between the fore-legs, and extending backwards for nearly two inches, which has been several times captured in the North of Ireland, will probably prove to be a variety of *Mus decumanus*. The dimensions taken from a stuffed specimen, procured by the late Mr. Thompson of Belfast, and now in the Museum of the Natural History Society of that town, are as follows:—Head and body, $13\frac{1}{2}$ inches; from the tip of the nose to the base of the ear, 2 inches; tail, $7\frac{1}{2}$ inches; tarsus, from the joint to the tip of toe, $1\frac{7}{8}$ inch; length of white space between fore-legs, 2 inches. Of two specimens in that collection, one is very dark sooty brown, the other quite black. Mr. Thompson, who first obtained this rat, was disposed to consider it a distinct species.

Mus Rattus.

Mus Rattus, DESM. Mamm. Sp. 476; BELL, Brit. Quad.

Le Rat, BUFFON.

Black Rat.

DESCRIPTION.—Tail a little longer than the body, almost naked, with about 250 rings; ears rounded, oval, half the length of the head, which is longer than in the *M. decumanus*, and the muzzle more taper; the upper jaw projects far beyond the lower, which is remarkably short; the soles of all the feet are tuberculated; upper parts greyish

black, lower dark ash-colour; feet and tail dusky. Varieties occur in white, brown, and black, with white spots.

Length of head and body, 7 inches 4 lines; head, 1 inch 10 lines; ears, 11 lines; tail, 7 inches 11 lines.

It has become very rare in the British Islands, and uncommon in most parts of Europe, having been expelled by the Brown Rat. Said, by De Selys Longchamps, to be unknown in Tuscany and South Italy, where it is replaced by the *Mus Alexandrinus*. Is still to be found on some of the small islands on the North-west coast of France.

Mus Alexandrinus.

Mus Alexandrinus, DESM. Mamm. Sp. 475; DE SELYS, Micromm.

Mus tectorum, SAVI, Buon. Faun. Ital.

Rat d'Alexandrie, DE SELYS, *l. c.*

DESCRIPTION.—Tail longer than the body by nearly one-fourth, with from 220 to 240 clearly defined rings, and furnished with short stiff hairs far apart; head somewhat elongate; muzzle rather sharp, flat above; lower jaw much shorter than the upper; ears very large, almost oval, broad; the long hairs of the back are stiff, almost of a uniform thickness throughout their length; feet almost naked, flesh-coloured. In colour resembles the *M. decumanus*; in size, shape, and habits, it is closely allied to *M. Rattus*, from which it appears to be chiefly distinguished by the colour of the fur and by the length of its tail. White, cream-coloured, and black varieties are not uncommon.

Length of head and body, 6 inches; tail, $8\frac{1}{2}$ inches.

Inhabits Tuscany, the Papal States, and Southern Italy, and is the only rat of the Island of Sardinia. In France, it is given by M. Crespon, 'Faune Méridionale,' as common near Nismes, and in Provence by Gervais. Was first observed by M. Geoffroy St. Hilaire in Egypt, whence

it was no doubt introduced into Italy with merchandise, and has driven away the *M. Rattus* from the south of that country ; it occurs, however, along with the Brown Rat. Is often found in numbers in vessels from Egypt when discharging their cargoes of corn in British ports, but does not appear to spread in those towns, being probably kept down by the common species.

Mus musculus.

Mus musculus, DESM. Mamm. Sp. 478 ; BELL, Brit. Quad.
Common Mouse.

DESCRIPTION.—Tail almost as long as the body, dark grey, with scaly rings, and slightly furnished with short hairs ; ears about half as long as the head, shaped like those of *M. Rattus*, which in its proportions it much resembles, though in miniature ; head taper ; muzzle rather acute ; the ears and eyes are smaller than in *M. sylvaticus*, the former rounded, but shorter and narrower than in that species, clothed with fine, soft, short hair. Fur greyish brown above, grey beneath. White, buff, and spotted varieties occur.

Length of head and body, 3 inches 2 lines ; head, 11 lines ; ears, 5 lines ; tail, 2 inches 11 lines.

The Mouse seems to have followed man wherever he has penetrated, and is to be found all over the world in every climate. It is very prolific, breeding several times in the year, and producing five or six young at a birth. The Prince of Musignano mentions a variety with the belly red-brown, as very common in Italy, and in particular at Florence.

Mus Islandicus.

Mus Islandicus, THIENEMANN ; DE SELYS, Micromm.

DESCRIPTION.—Size of *M. musculus*. Tail as long as the body, nearly naked, scales ash-brown above, white be-

neath; ears larger and wider than in *M. musculus*, partly hidden by the fur; upper parts of the body dark ash-brown; the sides with a mixture of many white and brown hairs; parts beneath white, or ash-white; feet dirty white, longer than in *M. musculus*, but not as long as in *M. sylvaticus*, between which two species it appears to be intermediate; the head is thicker than in the first; nose blunt. Fur very dense, as long as in *M. sylvaticus*; fore-feet furnished near the toes with a few very short white hairs, their thumbs very short, but with the nails distinct.

Length of head and body, 3 inches 6 lines; head, 1 inch; ears, 7 lines; tail, same length as the body.—F. M.

Has hitherto been observed only in Iceland (1838), where it frequents houses, like the Common Mouse of Europe.

Mus sylvaticus.

Mus sylvaticus, DESM. Mamm. Sp. 477; BELL, Brit. Quad.
Long-tailed Field-mouse.

DESCRIPTION.—Tail as long, or nearly as long, as the body, slender and tapering, velvety, blackish above, white beneath; head long; muzzle tapering; the whiskers very long; eyes large and prominent; ears large, oval, oblong, with the margin turned in at the base, and a lobe within the ear, near the base of the hinder margin, blackish at their tips; legs long. The upper part and sides of the head, neck, and body, and the outer surface of the legs yellowish, mixed with blackish (or of a yellowish brown), darker on the back, each hair being grey or ash at the base, then yellow, and sometimes black at the tip; under parts whitish, with a yellowish-grey patch on the breast. Varieties occur of white, brown, and dull yellow, the belly, however, being always white.

Length of head and body, 3 inches 8 lines; head, 1 inch

1 line; ears, 7 lines; tail, 3 inches 6 lines. These dimensions vary considerably in different localities.

It is very prolific, breeding more than once in the year, producing from seven to ten young at a birth. Feeds entirely on roots and other vegetables, and sometimes commits great ravages on the crops.

Is common all over the temperate regions of Europe. In Russia it frequents the woods and plains of the temperate parts, as well as the West of Siberia. Is very abundant in the British Islands and in France.

Mus agrarius.

Mus agrarius, DESM. Mamm. Sp. 480; PALLAS, Zoog. Ross. As.; DE SELYS, Micromm.

Sitric of the Russians.

DESCRIPTION.—Size of *M. sylvaticus*, but the ears much shorter, rounded, velvety inside. Tail rather longer than half the body, slender, hairy, blackish above, whitish beneath, with about ninety scaly rings; muzzle more pointed; head more oblong, and whiskers blackish and less numerous than in *M. musculus*; upper parts yellowish rufous, mixed with brown on the head, a narrow, black, dorsal line reaching from the head to near the root of the tail; under parts of the body, and feet white, the latter very slender, all the hairs slate-colour at the roots. The colour of the fur in general resembles that of the *M. sylvaticus*, except the black line on the back.

Length of head and body, 3 inches 8 lines; head, 1 inch; ears, 4 lines.—F. M.

Is very prolific. Lives among crops of grain and roots, on which it feeds. Is said to emit a strong disagreeable odour.

Inhabits European Russia, where it is very plentiful;

and Siberia, as far as the river Jenissei; also Hungary and near Berlin, and has been taken near Frankfort-on-the-Maine, which would appear to be its western limit (1838, De Selys). Not uncommon in Hanover, Brunswick, and Thuringia, and has been found in Lombardy.

Mus minutus.

Mus minutus, DE SELYS, Micromm.; DESM. Mamm. Sp. 485.

Mus messorius, DESM. Mamm. Sp. 479; BELL, Brit. Quad.

Mus campestris, F. CUVIER.

Mus pendulinus, Hermann.

The Harvest Mouse.

DESCRIPTION.—The general form is rather more elongated and slender than that of most of the genus. Tail generally rather shorter than the body, but variable in length, being often as long as the body, especially in old individuals, sometimes shorter by one-third; ears rounded, about one-third of the length of the head; eyes less prominent than in *M. sylvaticus*. Fur on the upper parts reddish brown, rather brighter than that of the Dormouse; the hairs are dusky at the base, red towards the point; the under parts pure white. The two colours are abruptly separated.

Length of head and body, 2 inches 6 lines; head, 10 lines; ears, 3 lines; tail, 2 inches 5 lines.

Is found in corn-fields. Feeds on grain, and is easily tamed and very gentle. Makes a nest of grass and straw, suspended at a small height from the ground.

Has been found in various parts of England, but is not common there. Is more frequent in Belgium and in parts of France. Has been found in Alsace, near Paris, on the Loire, and near Nismes. Occurs all over Germany, Sweden, and Finland. Professor Blasius has found it in North Italy, although Prince Buonaparte does not include it in his list of Italian animals.

Mus Nordmanni.

Mus Nordmanni, KEYS. u. BLAS. Wirbelth. Europ. p. 37; SCHINZ, Europäischen Fauna, Supp. to vol. ii.

DESCRIPTION.—Tail three-fourths of the length of the body, with 140 rings; ears rather less than half the length of the head; soles of the feet hairy for one-third of their length. Upper parts of the body red-brown, which colour passes by degrees on the sides into the yellowish red-grey of the under parts. The hinder division of the last grinder in the lower jaw is scarcely half as broad as the anterior division.

About equal in size to the common House Mouse.

A new species, discovered in the Crimea by Nordmann, before 1840.

Genus SMINTHUS.

Teeth.—Incisors, $\frac{2}{2}$; grinders, $\frac{4-4}{3-3}$; without divisions. Upper lip not divided, thickly clothed with hair; tail almost as long as the body, hairy.

Sminthus Nordmanni.

Sminthus Nordmanni, KEYS. u. BLAS. Wirbelth. Europ. No. 56, p. 38; SCHINZ, Europ. Faun. vol. ii. Supp.

Mus vagus, PALLAS.

Mus betulinus, PALLAS.

DESCRIPTION.—Ears half as long as the head, reaching to the eyes when pressed down; whiskers rather shorter than the head, arranged in a double row; tail rather shorter than the body, thickly clothed with hairs which divide into two rows, containing 140 scaly rings. A distinct tubercular thumb with a conical nail; fore-feet clothed with white adpressed hairs; hind-feet fringed with hairs which are directed downwards, and turned over on the soles; upper parts of the body greyish yellow, with a black stripe along

the back, beginning behind the shoulders; between this stripe and the flanks on each side is a long streak of light grey. The body beneath is yellowish white.

The dimensions are not given.

This species, the only one of its genus as yet known, was discovered in the Crimea by Nordmann before the year 1840. Said by Professor Blasius, in his 'Wirbelth. Deutschlands,' to occur, but not commonly, in Hungary, Finland, Sweden, and Russia.

Genus **CRICETUS.**

Teeth.—Incisors, $\frac{2}{2}$; molars, $\frac{3-3}{3-3}=16$; molars with smooth tubercles, the anterior molar being the largest. The cheeks furnished with pouches for carrying their food; the body compact; legs rather short; head thick; ears oval or round; fore-feet with four toes, and a tubercle as thumb; hind-feet with five toes, all armed with strong claws; tail moderate or short. Burrows in the ground, and feeds on roots and seeds.

Cricetus vulgaris.

Cricetus vulgaris, DESM. Mamm. Sp. 499.

Cricetus frumentarius, PALLAS, Zoog. Ross. As.

The Common Hamster.

DESCRIPTION.—Greyish red (or tawny red mixed with grey) above; lower parts of the legs and belly black, on each side three large yellowish spots; feet white; a white mark below the throat, and another on the breast. The hairs on the upper parts are generally dull tawny, inclining to ash for the greater part of their length, then with a ring of tawny and tipped with blackish, some hairs being entirely of this last colour; below the eyes and on the temporal region, the sides of the neck, the lower part of the sides of

the body, outside of the thighs and the rump red-brown, or reddish; the tip of the snout, cheeks, and outside of the fore-legs whitish; portions of the neck, breast, and belly are a very dark blackish brown; tail near the root clothed with reddish hairs, the rest naked and black. The males are somewhat larger than the females. There is a variety entirely black, except a little white round the mouth, on the nose and borders of the ears, the under parts of the feet, and tip of the tail.

Constructs with much art a burrow divided into several chambers, where it lays up a store of roots, grass, and corn on which to subsist in the winter; this store sometimes has been found to weigh 100 lbs.! The Hamster passes the cold season in its nest of straw, having first carefully closed the entrance. It becomes torpid in extreme cold. Sometimes attacks and eats small birds and mice. Is pugnacious, and when two of these animals are engaged in a fight, with their cheek-pouches puffed out, their appearance is very singular. The female goes with young four weeks, producing from three to nine, or even more, at a birth, in a burrow apart from the males, and breeds several times in the year.

Length of head and body, 8 inches; head, 1 inch 10 lines; ears, 6 lines; tail, 1 inch 6 lines.—F. M.

Inhabits the central and northern countries of Europe and Siberia. Is common in the fertile plains of Poland and Russia, and in Livonia. Is found in Germany, where it is common. In Silesia. In Belgium it occurs in small numbers near Liège, between Herne and Limburg, also near Aix-la-Chapelle. In France, only in Alsace. It is not found in Switzerland.

Cricetus migratorius.

Cricetus migratorius, DESM. Mamm. Sp. 500.

Cricetus accedula, PALLAS, Zoog. Röss. As.

DESCRIPTION.—Muzzle thick, fleshy, blunt; incisors long; ears naked, oval, rounded at the end, somewhat sloped or lobed on the outer border. Body thick and short; tail cylindrical, but scantily furnished with hair; upper parts of the body ash-grey, darker on the dorsal line; under parts and the extremities white.

Length of head and body, 3 inches 11 lines; head, 1 inch 3 lines; ears, 5 lines; tail, 8 lines.—F. M.

Habits the same as those of the preceding species, excepting that it occasionally migrates. Inhabits sandy marshes in the district of Orenberg, between the Volga and Jaik, where it is rather rare (Pallas).

Cricetus phæus.

Cricetus phæus, DESM. Mamm. Sp. 502.

DESCRIPTION.—Fur brownish ash on the back, lighter on the sides, and quite white beneath, on the throat, belly, and inside of the legs; on the back are numerous black hairs, longer than the rest; forehead and muzzle grey; round the mouth the fur is white; tail velvety, brown above and white beneath, and on the sides, muzzle, and neck very short; nose naked; ears very wide, not lobed or cut in, almost naked; whiskers longer than the head, whitish at their roots, and black for the remainder of their length.

Length of head and body, 3 inches 5 lines; head, 1 inch 2 lines; ears, $6\frac{1}{3}$ lines; tail, with the hairs, 9 lines.—F. M.

Feeds principally on grain; resorts in winter to barns and store-houses, where it is very mischievous. Pallas is

of opinion, that it does not become torpid, and that it is solitary in its habits. In Europe it was found by him only in desert places near the Volga and Astrachan, and on the Caspian Sea; it also inhabits Persia and Tartary.

Genus **DIPUS.**

Teeth.—Incisors, $\frac{2}{2}$; molars, $\frac{3-3}{3-3}$ or $\frac{4-4}{3-3} = 16$ or 18; lower incisors awl-shaped and very sharp; grinders simple, tuberculated; head very wide; eyes large; ears long and pointed; fore-feet short, with four toes, the thumb represented by a wart, surmounted by a nail; hind-feet five or six times as long as the fore-feet, with three or five toes; tail very long, cylindrical, covered with short hairs, ending in a tuft of long hairs. Feeds on fruits and roots; burrows in the ground, becoming torpid in winter: the long hind-legs of these animals enable them to leap with great power and swiftness.

Dipus Gerboa.

Dipus Gerboa, DESM. Mamm. Sp. 509.

Mus jaculus, LINN.

Dipus sagitta, PALLAS, Zoog. Ross. As.

The Jerboa.

DESCRIPTION.—Head very thick, and wide in proportion to the body; ears generally shorter than the head; hind-feet with three toes; the two upper incisors vertical, grooved in the middle; eyes large, prominent, lateral, about an inch and a half apart. Fur long, very soft and silky on the upper parts of the body and on the sides; the hairs are ashy for the greater portion of their length, then rufous, and at the tips blackish, whence results a general rufous tinge, varied with blackish; the under parts of the body, the inside of the hind-legs, and a crescent-shaped mark on each side behind quite white; fore-feet very short, white,

with five toes, of which the interior one is very short, with a long, robust claw, the other claws are hooked; hind-legs very long, with long rufous hairs on the outside; hind-feet with three toes, of which that in the middle is much the longest, armed with short, wide, blunt claws, and covered with short greyish hairs; there is also a very small spur on back toe, with a claw; the tail is very long, squared, hardly thicker than a goose-quill, covered with short hairs, darker above than below, and ending in a tuft of black hairs with white tips; the ears thin, broad, rounded. The enormous length of its hind-legs enables it to take very long and rapid leaps. Burrows in the earth, and feeds chiefly on roots.

Length of head and body, 5 inches 11 lines; head, 1 inch 9 lines; ears, 8 lines; tail, with the hair, 6 inches 5 lines.—F. M.

Inhabits Southern Russia, between the Don and the Volga, but was not known to Pallas as occurring in the Crimea; also Syria, Egypt, and Arabia.

Dipus jaculus.

Dipus jaculus, PALLAS, Zoog. Ross. As.; DESM. Mamm. Sp. 510.

DESCRIPTION.—Teeth, 18 in number; grinders, $\frac{4-4}{3-3}$; head oblong; muzzle thick and blunt; nose flesh-coloured, heart-shaped, the nostrils in the form of crescents; upper lip two-lobed; ears longer than the head, semi-cylindrical, folded, transparent, covered with a yellowish down; neck very short; tail longer than the body. Fur very light rufous above, varied with greyish brown, caused by the brown tips of the longer hairs; white beneath, a crescent of white on the hind-quarters on each side; hind-feet with five toes, the lateral ones very small, and that in the centre the longest; the tuft at the extremity of the tail is formed

by a double row of hairs, which are black for a great portion of their length, white at their ends; this white part of the tuft appears to encroach upon the black in an angular form; the fur is very soft and sleek.

Length of head and body, 6 inches 9 lines; head, 1 inch $10\frac{1}{2}$ lines; tail, without the hair, 10 inches 1 line.—F. M.

Burrows in the earth; passes the winter in a state of torpor. Feeds principally on grass, roots, and fruits; but at times attacks young birds, insects, and even animals of its own species. The female breeds several times in the year. Its speed is said to equal that of a fleet horse, and is attained by a rapid succession of extraordinarily long leaps. It uses its tail as an additional support when sitting.

Inhabits Southern Russia, from the Danube and Don to the Jaik, and is not uncommon in the Crimea. Is found also in Tartary.

Dipus Acontion.

Dipus Acontion, PALLAS, Zoog. Ross. As.

Dipus minutus, DESM. Mamm. Sp. 512.

DESCRIPTION.—Hind-feet with five toes; ears longer than the head; much resembling the *D. jaculus* in general proportions, but smaller. Upper parts of the body pale yellowish grey, mixed with brown, which last colour becomes more prevalent towards the rump; parts beneath, and the crescents on the hind quarters, white; the muzzle is of the same colour as the body above, not white at the tip, as in the last species.

Length of head and body, 4 inches 3 lines; head, 1 inch 3 lines; tail, without the hairs, 5 inches 1 line.—F. M.

Inhabits the same countries and places as the *Dipus jaculus*.

Genus **GERBILLUS**.

Teeth.—Incisors, $\frac{2}{2}$; molars, $\frac{3-3}{3-3}$; the first molar in each jaw with three tubercles, the second with two, and the third with one ; ears moderately long, rounded at the extremities ; fore-feet short, with four toes, and a rudimentary thumb ; hind-feet long, or very long, with five toes ; tail long, covered with hair.

Gerbillus meridianus.

Gerbillus meridianus, DESM. Mamm. Sp. 514.

Dipus meridianus, PALLAS, Zoog. Ross. As.

DESCRIPTION.—Body rather large behind ; head oblong ; muzzle somewhat long ; ears large, oval, downy ; whiskers very long ; incisor teeth yellow, the upper ones with a longitudinal furrow ; hind-feet prolonged, large, suited for leaping ; tail about as long as the body, strong, cylindrical, covered with hair, tufted at the tip. Fur above dirty rufous, mixed with grey ; beneath pure white, except a longitudinal line of red-brown on the belly.

Length of head and body, 4 inches 2 lines ; head, 1 inch $6\frac{1}{2}$ lines ; ears, $6\frac{1}{2}$ lines ; tail, without the hairs, 3 inches 1 line.—F. M.

Burrows in the earth ; feeds on nuts and seeds.

Inhabits the sandy deserts near the Caspian Sea, between the Volga and Jaik, and, according to Pallàs, is peculiar to that region.

Genus **SPALAX**.

Teeth.—Incisors, $\frac{2}{2}$; molars, $\frac{3-3}{3-3}$. Body prolonged, cylindrical ; eyes very minute, or (in one species) wanting (according to Pallas, but said by Desmarest to exist beneath the skin).

Spalax typhlus.

Spalax typhlus, KEYS. u. BLAS. Sp. 31 ; SCHINZ, Europ. Faun. vol. i. p. 65 ; PALLAS, Zoog. Ross. As.

Aspalax typhlus, DESM. Mamm. Sp. 518.

Podolian Marmot, PENNANT.

DESCRIPTION.—No eyes visible, but they exist beneath the skin, and are very minute, not being larger than a grain of turnip-seed, and can have no power of vision, the skin and fur over them being as thick as on the rest of the face ; about the size of the Common Rat ; body cylindrical ; head thick and angular ; a ridge extends from the nostrils to the ear on each side ; mouth small, higher than wide ; lower incisors twice as long as the upper, wedge-shaped, not covered by the lip, which is shorter than the upper one ; external ears almost none, but the internal organs of hearing much developed ; tail none ; feet short, with five toes ; two inguinal teats. Fur composed of short hairs, which are blackish ash at the base, reddish at the tips, giving to the animal a general grey colour, varied with reddish ; the front of the head and the body beneath are blackish.

Length of the head and body, 7 inches $7\frac{1}{2}$ lines ; head, 1 inch 9 lines ; vertical height of the head, 1 inch 6 lines ; width of ditto, 2 inches 1 line.—F. M.

Lives beneath the ground, in societies, burrowing like the Mole, and seldom coming to the surface, but remaining in its subterranean tunnels, along which it moves backwards and forwards with almost equal facility ; prefers the plains to hilly regions ; feeds on the roots of grass and other plants.

Is found through Southern Russia, from the borders of Poland to the Volga and the Caucasus, and especially in the Ukraine ; in Hungary, Moldavia, and Bessarabia. Blasius

includes Greece among the countries which this animal inhabits.

Spalax murinus.

Spalax murinus, PALLAS, Zoog. Ross. As.

Mus talpinus, SCHREBER, Mamm. iv. p. 711. tab. 203; PALLAS, Nov. Spec. Glir. p. 176. tab. 11.

DESCRIPTION.—Pallas, in the ‘Zoographia Rosso-Asiatica,’ gives only the following:—“*S. caudatus*, dentibus primoribus exsertis, unguiculis palmarum minusculis.” Burrows like the Mole, and feeds on bulbous roots.

Common in the more temperate parts of Russia and Western Siberia, but is not found in Eastern Siberia, nor further north than the 55th degree of latitude.

Genus ARCTOMYS.

Teeth.—Incisors, $\frac{2}{2}$; molars, $\frac{5-5}{4-4}=22$; upper incisors very strong, rounded in front; lower ones somewhat compressed; grinders simple, tubercled. Body compact; head wide, flat above; eyes large; ears short, and rounded; front feet with four toes and a rudimentary thumb; hind-feet with five toes; tail moderate or short, velvety.

Arctomys Bobac.

Arctomys Bobac, DESM. Mamm. Sp. 522.

Arctomys Baibak, PALLAS, Zoog. Ross. As.

DESCRIPTION.—Fur greyish black on the top of the head, somewhat reddish about the whiskers, and decidedly so on the throat, as well as on all the parts beneath, and on the inside of the legs. Fur of the upper parts of the body grey, with longer hairs interspersed of a brown or black colour, with greyish tips; tail red-brown above near the

root, yellowish to the middle, and blackish from thence to near the tip, which is deep black.

Length of head and body, 1 foot 4 inches; head, 4 inches; ears, 7 lines; tail, without the fur, 4 inches 4 lines.—F. M.

Prefers the less elevated to the higher mountain chains; burrows in a dry soil, choosing a southern exposure; lives in societies of about twenty; lays up a quantity of dried grass for its winter store, on which it feeds when not in a torpid state. Utters a whistling note on the approach of danger.

Inhabits the southern parts of Poland and Russia; is very plentiful on the Ural Mountains towards the south. In the Ukraine, Pallas says that a variety entirely black is not uncommon. The Bobak is to be met with in the Bukovina, and is found throughout Great Tartary and the South of Siberia, seldom north of the 55th degree of latitude, and extending, it is said, to Kamtschatka.

Arctomys Marmotta.

Arctomys Marmotta, DESM. Mamm. Sp. 523.

Mus Marmotta, LINN.

The Marmot.

DESCRIPTION.—Head flat at top; muzzle thick and short; eyes large, black; ears very short, truncated; whiskers stiff. Fur on the body, head, and sides grey-black of various shades; top of the head blackish; cheeks and ears grey; hairs on the back stiff and coarse, those on the parts beneath softer, of a grey colour slightly tinged with reddish; tail furnished with long, tufted, black, and red-brown hairs; claws robust, sharp, and black.

Length of head and body, 1 foot 3 to 6 inches; head, 3 inches 8 lines.—F. M.

Inhabits the highest mountain regions among perpetual

snows, in companies of from six to fifteen individuals; burrowing in the ground, generally on spots sloping to the sun, where it lays up large quantities of grass and moss both for warmth and food. The Marmots pass the greater part of the winter in a state of profound torpor, coming out of their holes in spring; their cry is well known in the Alps. The female breeds once a year, producing from four to six young at a birth.

Is found in the Alps of Switzerland, chiefly in the Cantons of Uri, Glarus, and the Grisons, but is not uncommon in the Tessin, Vallais, and Bernese Oberland (Tschudi). In several parts of the French Alps; in Savoy and Piedmont, and in the mountains of the South of Germany. It is not known in the Pyrenees nor in Spain.

Subgenus SPERMOPHILUS.

Arctomys citillus.

Arctomys citillus, DESM. Mamm. Sp. 524; PALLAS, Zoog. Ross. As.
Spermophilus citellus, F. CUVIER.

DESCRIPTION.—Head less depressed than in the preceding species; eyes large, prominent; ears very short, almost obsolete; whiskers shorter than the head, black; on each cheek is a pouch reaching to the neck; body elongate, cylindrical. Fur soft and short, brown or reddish grey above, thickly strewn with small white spots more or less distinct; parts beneath white or yellowish white; tail slender, covered with hairs of the same colour as the rest of the fur, and sometimes distichous.

Length (in the male) of head and body, 9 inches 9 lines; head, 2 inches 5 lines; ears, $1\frac{1}{4}$ line; tail, without the hairs, 2 inches 10 lines.—F. M.

Found singly or in pairs; burrows in the earth on the sloping sides of mountains. Lays up for the winter a

store of corn and other grains, which it conveys in its cheek-pouches ; passes that season for the most part in a torpid state.

Inhabits Austria, Bohemia, Poland, and “Southern Russia, from the frontier of Poland to Kamtschatka ;” is “less abundant in the Crimea.” In Silesia it is very common in sandy hills, but is not found in many parts of Germany.

Genus **SCIURUS.**

Teeth.—Incisors, $\frac{2}{2}$; molars, $\frac{5-5}{4-4}$; the fifth upper grinder is found only in young animals, the adults having only four, above and below, their summits tubercled ; body long, slim ; head small ; eyes large ; ears erect, moderate ; fore-feet with four long, separate toes with compressed, hooked claws ; thumb small, with a blunt claw ; hind-feet very large, with five very long toes with hooked claws ; tail long, frequently with hairs arranged in rows on each side.

Sciurus vulgaris.

Sciurus vulgaris, DESM. Mamm. Sp. 527 ; BELL, Brit. Quad.
Common Squirrel.

DESCRIPTION.—The head is thick, rounded behind, flattened at the sides and on the forehead ; eyes prominent, high on the head ; ears straight, large, with a tuft of long hairs at the tips ; the back is arched ; tail long and very bushy, the hairs being distichous. Fur on the upper parts reddish, or bright chestnut-brown, the red tint being deepest on the sides of the head and neck, shoulders and outside of legs ; the animal is said to be of a brighter red in Britain than elsewhere ; the lower parts are white ; tail the colour of the back. Grey, ash-coloured, and black varieties are not uncommon.

Length of head and body, 9 inches ; head, 2 inches 1 line ; ears, $9\frac{1}{2}$ lines ; tail, without the hair, 6 inches 6 lines.

Lives chiefly on trees, which it climbs with great agility. Feeds on nuts, acorns, and young shoots ; sits erect, using its fore-feet as hands. Produces three or four young at a birth, in a nest made of moss, and placed in a fork or hollow of a tree.

Common over nearly the whole of Europe in suitable situations. Is generally dispersed over England and Scotland, but is rare in Ireland. Is common in France, and all over Russia, except the Crimea, where it is not found (Pallas). In northern climates, and sometimes so far south as in France, it becomes more or less white in winter.

Sciurus alpinus.

Sciurus alpinus, F. CUVIER ; DESM. Mamm. Sp. 846, Supplement.

DESCRIPTION.—Fur dark brown, speckled with yellowish white on the back ; lower parts pure white ; feet rufous ; between the white on the neck and the brown on the back is a rufous band ; the inside of the legs grey ; margin of the lips white ; whiskers black ; the brown parts are darker in summer than at other times, in winter they become mixed with grey.

First classed as a distinct species by F. Cuvier.

Its habits are the same as those of the Common Squirrel.

It is found in the Pyrenees and in the Alps (De Selys).

Sciurus striatus.

Sciurus striatus, DESM. Mamm. Sp. 547 ; SCHREBER.

Tamias striata, LESS.

Ground Squirrel.

DESCRIPTION.—This Squirrel belongs to the subgenus *Tamias*, which is characterized by possessing cheek-pouches, and

by its habit of burrowing in the ground. The ground-colour of the upper parts of the body is tawny brown; along the back are five longitudinal black bands; the space between that on the dorsal line, and the first band on each side, is light yellow, that which divides this band from the outer one being dirty white; on the head there are four streaks, two of them whitish, the others rusty brown; the tail is blackish above, until near the tip, where it becomes quite black, the tip itself being white.

Body, $5\frac{1}{2}$ inches; head, $1\frac{1}{2}$ inch; tail, 4 inches.—F. M.

The Ground Squirrel makes its burrow with an entrance at each end, and with several side chambers, where it lays up its winter stores of various sorts of grain.

It is found all through Siberia, and extends into that corner of Europe which lies between the rivers Kama and Dwina and the Ural Mountains.

A species, said to differ from the above only in some of its markings, inhabits a great part of North America.

Genus **PTEROMYS.**

Teeth.—Incisors, $\frac{2}{2}$; molars in the young, $\frac{5-5}{4-4}$; in the adult, $\frac{4-4}{4-4}$; the anterior molar in each upper jaw falls out when the animal becomes old; ears rounded; eyes large; fore-feet with four long toes, armed with sharp claws; thumb rudimentary, with a blunt claw; hind-feet formed for climbing, with four widely divided toes. The skin of the sides is very much extended between the fore- and hind-legs, so as to sustain the animal in the air when taking its long leaps. The feet are provided with a bony appendage, intended to support this membranous extension; tail long, velvety, sometimes with distichous hairs.

Pteromys Sibericus.

Pteromys Sibericus, DESM. Mamm. Sp. 553.

Sciurus volans, LINN.

The Flying Squirrel.

DESCRIPTION.—Head rounded; muzzle short and blunt; eyes large, prominent; ears short, rounded; whiskers black, stiff, as long as the head; the membrane of the sides slightly lobed behind the fore-foot. Fur whitish grey on the upper parts of the body, on the lower parts pure white; the base of the hairs and the wool next the body brown; along the inner portion of the membrane runs a streak of greyish brown; the extremities of the feet are white; the tail, which is more than half as long as the body, is covered with long ashy grey hairs.

Length of head and body, 6 inches 4 lines; head, 1 inch 8 lines; tail, without the fur, 3 inches 10 lines.

Its habits are solitary; it forms a nest in a hollow tree, where it remains generally during the day, coming out at night to feed on the young shoots, especially of the birch and fir. Climbs with facility, and leaps from tree to tree, assisted by the extension of its skin. The female produces from two to four young in the month of May.

Inhabits the forests of Lithuania, Livonia, Lapland, and Finland, and is nowhere so common as in Siberia. In Russia proper, according to Pallas, it is very rare; less so in the pine and birch forests of the Ural Mountains.

Genus MYOXUS.

Teeth.—Incisors, $\frac{2}{2}$; molars, $\frac{4-4}{4-4}$, simple, the summits marked with transverse ridges of enamel, thus resembling the Rat rather than the Squirrel family. Tail long, somewhat bushy, the hairs sometimes distichous; fore-feet with four toes and a rudimentary thumb; hind-feet with five toes.

Myoxus glis.

Myoxus glis, DESM. Mamm. Sp. 463; PALLAS, Zoog. Ross. As.

Sciurus glis, LINNÆUS.

Le Loir, BUFFON.

DESCRIPTION.—Ears large, oval, almost naked; eyes very prominent, edged with black; upper parts of the body, tail, and exterior of the limbs grey mixed with black, and having a silvery appearance, the hairs on those parts being ash-colour at their roots and for half their length, then either grey, or grey and black; lower parts white, slightly tinged in some places with rufous; tail well furnished throughout its entire length with hairs arranged like those of the Squirrel, grey above, white beneath.

Length of head and body, 5 inches 10 lines; head, 1 inch 7 lines; ears, 6 lines; tail without the hair, 4 inches 9 lines.

Lives in woods and forests, climbing the trees and leaping from branch to branch with great agility; builds a nest of moss in hollows of trees or rocks; feeds on nuts of different kinds, and sometimes eats birds' eggs, or even the young birds; passes the winter in a state of torpor, which is said to be less complete when the cold is more than usually intense. The female produces in the spring four or five young at a birth.

It is found in Spain, in the South of France, and in the Department of the Moselle; in Switzerland, Italy, Germany, Silesia, Greece, and Russia, near the middle and lower course of the Volga, and in the Caucasus.

Myoxus nitela.

Myoxus nitela, DESM. Mamm. Sp. 464.

Myoxus nitedulæ, PALLAS, Zoog. Ross. As.

Myoxus quercinus, BLASIUS, Wirbelth. Deutschl.

Le Lerot, BUFFON.

DESCRIPTION.—Body and head shorter than in *M. glis*, ears longer; front of the head yellowish rufous; all the upper parts and the outside of the legs grey-rufous, lighter on the sides, the lower portion of the legs blackish grey; lower part of the cheeks, chin, and all the lower portion of the body, and the inner surface of the legs dirty white; a black, or nearly black patch surrounds the eye, and reaches to beneath and behind the ear; a small spot of yellowish white in front of the ears, which are covered with very short rufous-grey hairs. The hairs of the upper part of the body are dark grey for three-fourths of their length, chestnut at the extremities; tail black, with close hairs, tip white, ending in a tuft of long hairs.

Length of head and body, 4 inches 5 lines; head, 1 inch 5 lines; ears, 9 lines; tail (without the fur), 4 inches.

Lives generally in gardens and outhouses; makes its nest in holes of walls or trees, feeding on apples, peaches, and other pulpy fruits, as well as on nuts and pulse, &c., of which dry food it lays up a store for winter, although it passes a great part of that season in torpor, about five or six individuals inhabiting the same retreat. Produces in spring five or six young.

Is found in all the temperate parts of the European Continent, as far north as Poland and Prussia. In Russia, Pallas notices it as living in hazel woods on the banks of the Volga, and near Astrachan. The Prince of Musignano records it as very common in Sicily. Crespon finds it in the South of France, and De Selys Longchamps all over Belgium.

Myoxus dryas.

Myoxus dryas, SCHREBER, tab. 225 B.; DESM. Mamm. Sp. 465.

DESCRIPTION.—Colour of the upper parts of the body and of the tail rusty brown, lower parts yellowish white; eye placed in the centre of a black patch, as in the *M. nitela*, but this patch reaches only as far as the base of the ear, not extending to the shoulder or behind the ear; tail rather short, bushy for the whole of its length, as in the *M. glis*, the hair being distichous.

Length of head and body, 4 inches; tail, 3 inches.—F. M.

Said to inhabit woods in Russia and Georgia (Desmarest).

N.B.—This species requires confirmation. Pallas does not mention it in his 'Zoographia.'

Myoxus avellanarius.

Myoxus avellanarius, DESM. Mamm. Sp. 466; BELL, Brit. Quad.

Myoxus muscardinus, SCHREBER.

Common Dormouse.

DESCRIPTION.—Fur on the upper parts light tawny or rufous, parts beneath paler and yellowish. Tail flattened, furnished with rather long distichous hairs, dull rufous; whiskers about $1\frac{1}{4}$ inch in length; the ears are rather more than one-third of the length of the head; the body rounded and full; eyes black, large and prominent.

It builds a nest of moss in low bushes; several of which are sometimes seen near each other. In winter it coils itself into a ball, and falls into complete torpor. Feeds on corn, haws, acorns, and young hazel-nuts.

It is found throughout the greater part of Europe. Is common in England. In the South of France less so than the *M. glis* or *nitela* (Crespon). Not uncommon in Switzerland, in the less mountainous parts. Inhabits Germany; is rare in Silesia. Pallas does not include it among Russian

animals in his 'Zoog. Ross. As.' It is found in Italy from north to south. To these countries Desmarest adds Spain and Sweden.

Division II. RODENTS IN WHICH THE CLAVICLES ARE
EITHER IMPERFECT OR WANTING.

Genus **HYSTRIX.**

Teeth.—Incisors, $\frac{2}{2}$; molars, $\frac{4-4}{4-4}$; upper incisors very strong, smooth in front, their edges shaped like a chisel; lower incisors strong and slightly compressed; molars composite, their summits flat, but presenting three or four spaces surrounded by enamel. Tongue covered with prickly scales; front-feet with four toes and a rudimentary thumb; hind-feet with five toes, all with strong claws except the thumb, where the claw is small and blunt. A great part of the body covered with quills, or with spines of various length, sometimes with hair intermixed; tail of various lengths, sometimes prehensile.

Hystrix cristata.

Hystrix cristata, DESM. Mamm. Sp. 555; WATERHOUSE, Rodentia, p. 448.

Common Porcupine, WATERHOUSE, *l. c.*

DESCRIPTION.—Head long, flattened at the sides; muzzle very thick, resembling that of the Hare; eyes small; ears wide, short, margined. The quills of the upper parts of the body are very long, especially those on the lower part of the back, which are 12 inches in length, striated longitudinally, coloured in alternate wide rings of yellow, white, and black; on the crown of the head, and extending a short distance along the back, is a crest composed of very long bristles, curved gently backward; the shoulders, limbs, and under parts of the body are covered with spines; the tail is

clothed with stout quills, and from its tip spring about twenty hollow quills, most of them truncated and open at the end, supported upon a very slender stalk; the feet are covered with long, nearly black, coarse hairs; the whiskers 7 or 8 inches long. General colour of the animal brown-black; a white band crosses the fore part of the neck, and extends about half-way up the sides, becoming gradually narrower from the middle.

Length of head and body, 28 inches; tail without the quills, 6 inches; one of the quills at the end of the tail, $2\frac{1}{2}$ inches.

It burrows in the ground or lives in holes of rocks, feeding on vegetable substances; its flesh is well-flavoured.

The Porcupine inhabits Europe, Greece, Italy in the Apennines, and near Rome, and Spain. Some suppose that it is truly indigenous only in North Africa, and that it has been introduced into Europe.

Genus **LEPUS**.

Teeth.—Incisors, $\frac{4}{2}$; molars, $\frac{6-6}{5-5}$ or $\frac{5-5}{5-5}$. The grinders have flat summits, the plates of enamel transverse; incisors grooved, four in the upper jaw, viz. two in front and two smaller immediately behind them. Ears very long; tail short, turned up; fore-feet with five toes, hind-feet with four; hind-legs much longer and more muscular than the fore-legs.

Lepus timidus.

Lepus timidus, DESM. Mamm. Sp. 559; BELL, Brit. Quad.

DESCRIPTION.—Ears longer than the head, which is thick and large; inside of the cheeks hairy; eyes lateral, large, and prominent; soles of the feet hairy. Fur a fine down, with longer hairs intermixed, of a tawny-grey or rusty-

brown colour, the red tint prevailing more in some parts than in others, each hair grey at the roots, black in the middle, and tawny at the tips; under parts of the body, inside of the thighs, and a transverse patch beneath the lower jaw white; the neck and chest in front light reddish, as are the sides of the body and the legs outside; ears yellowish grey on the anterior part of the outer surface, whitish behind, and the tips black; the tail is black above and white beneath.

Length of head and body, 1 foot 9 inches 8 lines; head, 3 inches 10 lines; ears, 4 inches 10 lines; tail, 3 inches 8 lines.

Feeds entirely on grass and other vegetables. Breeds several times in the year, producing from one to five young at a birth, after a gestation of thirty days. The young are born with the eyes open and clothed with fur. Weighs from 8 to 12 pounds.

This Hare is found in almost every part of Europe excepting the most northern. It is the Common Hare of England, but is not found in Ireland. Is common in Spain, France, Switzerland, Germany, Italy, Greece, Turkey, and Poland. In Russia, according to Pallas, it is the only species south of the 55th degree of latitude, but does not occur further north, and is unknown in Sweden and Norway. Its range extends into Persia.

Lepus Mediterraneus.

Lepus Mediterraneus, SCHREBER, Saugth. Supp. vol. iv. p. 77; WATERHOUSE, Hist. Rodent. p. 43.

DESCRIPTION.—Only 5 grinders in the upper jaw on each side; ears longer than the head, nearly naked in the middle, and black at the tips; the legs and back of the neck delicate yellowish rufous; hairs on the back near the extremities almost cream-colour, the extremities themselves

being distinctly black ; feet mottled with whitish ; fore part of the tibia pure white ; a large rufous patch in front of the thigh ; tail black above, white beneath ; under parts of the body white, tinted with yellow. Resembles the *L. timidus* in many respects, but is one-third smaller, the ears longer in proportion, and its general colour much paler.

Length of head and body, 15 inches 5 lines ; head, 3 inches ; ears, 4 inches 3 lines.

Inhabits the Island of Sardinia, where it is the common species, and is thought to occur also at Gibraltar.

Lepus hybridus.

Lepus hybridus, DESM. Mamm. note to Sp. 561 ; PALLAS, Zoog. Ross.

As. ; WATERHOUSE, Rodentia, p. 45.

Lepus medius, NILSSON, Scand. Fauna, i. p. 224.

The Russak Hare, WATERHOUSE, *l. c.*

DESCRIPTION.—Ears rather longer than the head, with a black patch at the apex, which is much extended on the outer surface. Fur long and silky, much mottled on the back with black and pale yellow ; the hairs are pure white at the root, then with a ring of black about the middle, succeeded by a broader ring of delicate yellow, and the tip black ; sides white, tinged with yellow ; cheeks white, a yellowish patch on the sides of the muzzle ; fore-legs in front and the tarsi tinged with very pale rusty yellow ; tail black above, white beneath ; under parts pure white, as are the throat and chest.

Length of head and body, 26 inches ; from tip of nose to ear, 4 inches 4 lines ; ears, 5 inches ; tail, including hair, 6 inches.

Inhabits Russia, generally between 55th and 63rd degrees of latitude ; and if it is really identical with the *L. medius* of Nilsson, is also met with in Zealand.

Lepus variabilis.

Lepus variabilis, DESM. Mamm. Sp. 561; BELL, Brit. Quad.; WATERHOUSE, Rodentia, p. 51.

Blue Hare of Scotland. Irish Hare.

DESCRIPTION.—Ears shorter than the head, or sometimes about equaling it in length, with a small distinct black patch at the tips; tail shorter than in the *L. timidus*, and without the distinct black patch on the upper surface. The general hue of the fur on the upper parts is brown, obscurely tinted with rufous, finely penciled with black and rufous-yellow; throat and under parts white; tail white, with more or less dark on the upper surface. This is the summer attire; but in winter, in most of the countries where it is found, it becomes pure white, excepting the tips of the ears, which always remain black, and very frequently their lower parts and the top of the head retain their summer hue. The Irish variety, being the only Hare found in that island, is of a richer and more rufous colour on the upper parts, the exposed ends of the hairs being either black or rufous, and the downy fur has also a redder tinge; the chin is greyish white; the chest and throat grey; the inside of the legs and parts beneath white; hind-legs mottled with white and rufous.

The length of head and body varies from 20 inches to 25 inches; from tip of nose to root of ears, from 3 inches 9 lines to 4 inches 3 lines; ears from 3 inches 5 lines to 4 inches 3 lines.

The Varying Hare inhabits Scotland, Cumberland, and Ireland, the whole of Norway and Sweden, the north and centre of Russia, and all Siberia to Kamtschatka. In Livonia it does not become white on the upper parts of the body. In Ireland, although not uncommon, with the greater part of the body, or even with the entire body white, yet this

change does not seem to depend upon the season, and the white fur is thought to be permanent when it has been once assumed. It is found in the Alps of Switzerland, Italy, and France, extending to Salzburg, and is said to inhabit parts of Bavaria. With these exceptions, it is generally absent in the centre of Europe. According to P. Gervais, 'Zool. et Paléontol. Française' (vol. i. p. 29), "The Varying Hare inhabits some parts of the Pyrenees."

Lepus canescens.

Lepus canescens, NILSSON; WATERHOUSE, Rodentia, p. 57.

The Ashy-grey Hare, WATERHOUSE, *l. c.*

DESCRIPTION.—The following is from Waterhouse's work, taken from a specimen in winter fur:—Fur long and soft, of a pale ashy-grey hue on the upper parts of the body; that on the back is composed of hairs which are ashy white at the roots, very pale rufous-brown beyond, followed by a broad grey-white ring and a dusky point; sides and limbs chiefly ashy white; feet white, but in parts suffused with rufous, the fore-feet most distinctly so; the whole of the under parts, including the chest, are white, as is the tail, but this latter is slightly tinted with grey on its upper surface; the crown of the head is faintly suffused with rufous; the nose rufous-yellow above; ears about equal to the head in length, with the apex black, and a black fringe extending about half-way along the hinder margin.

Length of head and body, 21 inches; from nose to ear, 4 inches 3 lines; ears, 4 inches.

This species appears to be confined to the southern parts of Scandinavia, where it is found throughout Gothland, extending northward to Jaemtland.

Lepus cuniculus.

Lepus cuniculus, DESM. Mamm. Sp. 560; BELL, Brit. Quad.
The Rabbit.

DESCRIPTION.—Fur of a greyish-brown colour; neck reddish; throat and belly white; ears about as long as the head, brownish grey throughout their whole length; tail brown above, white beneath. The general form is fuller and rounder than that of the Hare, and the flanks are less contracted; the head, ears, and hind-legs much shorter.

Length of head and body, 16 inches 6 lines; head, 3 inches 6 lines; ears, 3 inches 8 lines; tail, 3 inches 2 lines.

Breeds several times in the year, producing seven or eight at a litter; burrows in the ground. Every attempt to produce a breed between the Rabbit and Hare has hitherto failed.

Is very numerous in almost every part of the British Islands; found in some parts of Germany; common in France, but is nowhere wild in Switzerland (Schinz). In Spain it is especially abundant; is only met with in some localities in Italy; is not found wild in Silesia, Gallicia, or the Bukovina; nor does Pallas include it among Russian animals. It occurs in North Africa.

Genus LAGOMYS.

Teeth.—Incisors, $\frac{4}{2}$; molars, $\frac{5-5}{5-5}$; ears short, and rounded; hind-legs short; the upper incisors consist of two large teeth in front, and two much smaller immediately behind these, as in the Hares; there is one molar less in the upper jaw than in that genus.

Lagomys pusillus.

Lagomys pusillus, DESM. Mamm. Sp. 568; CUVIER, Règ. Ann.;
WATERHOUSE, Rodentia, p. 19.

Lepus pusillus, PALLAS, Zoog. Ross. As.; SCHREBER, Säugethiere, iv.
p. 906. pl. 237.

DESCRIPTION.—General tint of the fur brown, the fur rather strongly penciled with black and yellow-brown; the ears are short and rounded, with a broad white margin, and a distinct submarginal black band on the inner surface; externally, the ears are black in front and grey on the hinder part, where the hairs are very long; the hairs on the upper parts are blackish grey at their roots, tinged with brownish yellow towards the points, which are black; feet nearly white above, slightly tinted with yellow; the thick fur on their soles dusky brown; the tail is not visible.

Length of head and body, 7 inches; ears, $8\frac{1}{2}$ inches.

Burrows in the ground, sometimes taking shelter among loose stones; feeds for the most part at night; collects a large quantity of dried grass or other herbs into small stacks for its winter food; utters a chirping noise, compared by Pallas to that of the Quail.

Inhabits the southern districts of the Ural Mountains, and as far west as the Volga, sometimes occurring on the right banks of that river; is found in Siberia as far as the Obi.

Order PACHYDERMATA.

Some families furnished with three kinds of teeth, others with two kinds only. No clavicles. Feet provided with hoofs. Do not ruminates.

Genus **SUS**.

Teeth.—Incisors, $\frac{4}{6}$ or $\frac{6}{6}$; canines, $\frac{1-1}{1-1}$; molars, $\frac{7-7}{7-7}$

=42 or 44; the lower incisors directed obliquely forwards, the upper incisors conical; the canines powerful, reaching beyond the mouth; the grinders are simple, the anterior ones small and narrow, the hinder ones oblong, with the crowns tubercled; snout elongated, cartilaginous, truncated at the extremity; eyes small, pupil round; ears long, pointed; feet with four toes, the two centre ones large, and resting on the ground; two others smaller, not reaching to the ground, all four hoofed.

Sus scrofa.

Sus scrofa, DESM. Mamm. Sp. 615; JENYNS, Man. Brit. Vert.
The Wild Boar.

DESCRIPTION.—The canines or tusks powerful, triangular; the head elongated; the neck short; body thick and muscular; mouth large, with the upper lip pushed up by the tusks; the body covered with long, stiff, bristly hairs, intermixed at the roots with soft woolly fur, the longest hairs are on the back; the general colour dusky grey. The young has the body marked with longitudinal stripes of a rufous colour. The female (Sow) is smaller than the male, and with smaller tusks.

Goes with young rather more than four months, producing from three to nine at a birth. Feeds chiefly on roots and nuts, but also on young animals. This species is without doubt the original from which our domestic breeds are derived.

Formerly abundant in the woods in England. Existed about London in the time of Henry the Second, if not later. Inhabits the temperate regions of Europe and Asia; does not occur north of the Baltic Sea. In France it is common in the woodland districts of many departments, as well as in Corsica. In Spain it inhabits Castille, Estremadura, and the Sierra Morena. Is found in

many parts of Germany, Poland, and Italy; in the temperate parts of Russia, in forests and reedy swamps, and is very numerous in the Caucasus. Supposed to appear only occasionally in Switzerland from the neighbouring countries, sometimes crossing the Rhine from France, but no longer breeds there (Schinz).

Order RUMINANTIA.

Grinding teeth with their crowns marked with two double crescent-shaped ridges of enamel; the upper jaw without cutting teeth, of which there are eight in the lower jaw, except in the Camels, which have six only; two hoofed toes on each foot, behind these are two small spurs representing the lateral toes; frontal bones generally furnished with horns in one or both sexes.

Genus **CERVUS**. DEER.

Grinding teeth six on each side in each jaw; no canines, except in the males of some species; two branched, or palmated, deciduous horns, generally confined to the males. Feeds on vegetable substances.

Cervus Alces.

Cervus Alces, DESM. Mamm. Sp. 662; PALLAS, Zoog. Ross. As.
Elk or Moose Deer.

DESCRIPTION.—The horns are palmated, at first dagger-shaped, afterwards divided into narrow slips; and when perfect, at the age of five years, they assume the form of triangular blades, with tooth-like projections on their outer edges; these latter increase in size with the age of the individual; the head is long, narrow before the eyes,

swollen towards the muzzle, which resembles that of the Horse ; upper lip very long and thick ; eyes small, placed near the horns ; ears very long ; neck short ; under the throat is a tuft of long hair like a beard, and in the male a protuberance on the throat ; tail very short ; hair on the top of the neck and shoulders very long, forming a mane ; the colour of the top of the head, back, and rump is tawny brown, neck, shoulders, flanks, and thighs darker brown.

Length of head and body, 6 feet 10 inches ; head, 1 foot 11 inches ; ears, 10 inches ; horns, about 3 feet ; tail, 1 foot. 6 inches ; height at shoulders, 5 feet 2 inches.

Feeds on grass and leaves of trees. From the shortness of its neck, it cannot graze without spreading apart the fore-legs. Produces one or two, rarely three young at a birth.

The Elk inhabits woods and moist places in Poland, especially Lithuania, Livonia, Finland, and all Russia, from the White Sea to the Caucasus, and in Siberia (Pallas). “ It is tolerably common in parts of Scandinavia, and, being now protected there by law, is increasing, especially in Wermeland and Dalecarlia ; it seldom passes the limits of 58° and 64° north latitude” (Lloyd). Is supposed to be extinct in Silesia and Gallicia, but is occasionally found in parts of East Prussia.

Cervus Tarandus.

Cervus Tarandus, DESM. Mamm. Sp. 663 ; PALLAS, Zoog. Ross. As.

Cervus rangifer, BRISSON.

The Reindeer.

DESCRIPTION.—The horns, which are carried both by the male and female, are much developed ; the shaft is long, slender, compressed ; the antlers palmated, and branching into several irregular terminal points ; the lachrymal

furrow is distinct; the ears large; the tail short; the hoofs rounded and very wide, the spurs are of considerable size; the coat is composed of two kinds of hair, the one woolly, the other silky, like that of the Stag, and very brittle, longer under the neck than elsewhere. The colour of the fur varies with the season and the age of the animal; in the adult it is dark brown in the spring, passing by degrees to greyish brown and greyish white, and becoming almost white in the middle of summer. The lower part of the legs is darker than the upper parts, and above the hoof is a narrow white ring. The Fawn is brown on the upper parts of the body, with the lower parts and legs reddish.

Length of head and body, 5 feet 6 inches; tail, 3 inches; height at shoulders, 3 feet 4 inches; length of the horn, 3 feet.

The Reindeer feeds on grass in summer, and on lichens, especially the *Lichen rangiferinus*, in winter. The female goes with young eight months, producing two at a birth.

Great numbers of these animals are domesticated and kept by the Laplanders and other tribes of the North, for the sake of their milk, flesh, and skins, as well as for the purpose of drawing their sledges. They are found wild along the Arctic Ocean, and in the northern parts of Norway, Sweden, and Russia, occasionally visiting the South of Scandinavia as far as Dalecarlia. They are very numerous in the Dovre Mountains.

Cervus elaphus.

Cervus elaphus, DESM. Mamm. Sp. 666; PALLAS, Zoog. Ross. As.;
BELL, Brit. Quad.

Red Deer.

DESCRIPTION.—The male is provided with canine teeth, and with horns, which are rounded, with numerous antlers,

three of them being turned forward ; the lachrymal furrow is distinct ; the eyes are large and full. A fine Stag stands about 4 feet or more ; the Hind is usually smaller. The colour of the fur in summer is reddish brown, the rump paler, in winter brownish grey. The Hind goes with young eight months and a few days, seldom producing more than one, which is spotted on the back and sides.

Length of head and body, 6 feet 4 inches ; tail, 6 inches.

Rare in England and Ireland ; more numerous in Scotland, where large tracts of moorland are devoted to its maintenance for the sake of the sport of stalking these animals. It exists in several of the forests of France in a wild state. In Sweden it is almost confined to certain parts of the province of Scania, and in Norway to a few islands along the coast : there are said to be considerable numbers on the Island of Hittem (Lloyd). It is not found in Russia in Europe, but occurs in the Caucasus, and a great part of Siberia (Pallas). Inhabits most of the forests of Germany ; occurs sparingly in Silesia, Galicia, and the Bukovina. Almost, if not quite, extinct in Switzerland (Schinz). Is said still to exist in Spain in the Asturias. In Italy it is confined to some parts of the Alpine range on the northern frontier.

The variety *Cervus Corsicanus* (Desm. l. c.) is found in Corsica ; it differs from the more usual form, in being smaller and more compact, with the legs shorter ; there are also differences in the branching of the horns, and in the shade of the fur.

Cervus Dama.

Cervus Dama, DESM. Mamm. Sp. 672 ; BELL, Brit. Quad.
Fallow Deer.

DESCRIPTION.—The male is furnished with horns, which are divergent, the upper part flattened and palmate, the

beam round, with two antlers standing forwards; has no canine teeth; the lachrymal furrows are distinct. The colour in those animals confined in parks varies, being sometimes reddish brown mottled with white; sometimes yellowish white, mottled with darker spots; frequently a uniform dark-brown, or almost black; the latter variety was introduced to English parks from Norway in the time of James the First, as being more hardy than the lighter varieties; and, for the same reason, into several parts of France about the year 1760.

Length of head and body, 5 feet; height at shoulder, nearly 3 feet; tail, 7 inches.

In a wild state, the Fallow Deer exists at present only in Spain, Barbary, and in the Island of Sardinia, where it is very common. The description and figure of an individual from the last-named locality, given by the Prince of Musignano in his 'Fauna Italica,' resemble closely the common mottled race of our parks. That author is inclined to look upon the Fallow Deer of Spain as of a different species from the Sardinian animal.

Cervus capreolus.

Cervus capreolus, DESM. Mamm. Sp. 674; BELL, Brit. Quad.
Roe-buck. Roe-deer.

DESCRIPTION.—The horns rise perpendicularly from the head, are very rough and furrowed, with two antlers; the first about one-third from the base, directed forwards; the second higher up, directed backwards. The female is without horns. The colour varies considerably, being sometimes reddish brown, in some brownish grey, and in others dusky; the under parts and inside of thighs greyish white; the part round the tail pure white. The tail is very short, concealed within the hair; no lachrymal furrows.

The female goes with young five months and a half,

producing two at a birth, always male and female (Desmarest).

Length of head and body, 3 feet 9 inches; horns, $8\frac{1}{2}$ inches; tail, 1 inch; height at shoulder, 2 feet 3 inches.

Is rarely met with in England, and is not found in Ireland, but is numerous in parts of Scotland. Inhabits elevated forests nearly all over the temperate countries of Europe. Is frequent in Russia in woods and hilly districts; also in Poland and Siberia. In Scandinavia it is said to be confined to the South of Sweden, and to be rather common in parts of Scania (Lloyd). In Spain it is found everywhere in suitable situations, and abounds in the Sierra de Segura (Widdrington). In France it is common in many Departments. Is now rare in Switzerland, though formerly common in the less mountainous districts of that country. Buonaparte mentions it as one of the principal beasts of chase in Italy. It is well known in the German forests, and in the Carpathian Mountains.

Cervus Pygargus.

Cervus Pygargus, DESM. Mamm. Sp. 675; PALLAS, Zoog. Ross. As.

DESCRIPTION.—Horns moderate, rounded, very rugged, with one antler directed forwards, originating far above the burr of the horn, and another directed backwards near the top of the horn. Closely resembles the *Cervus capreolus*, differing principally in the absence of a tail, which is altogether wanting; it is also larger than that species, as are its horns. The colour of the fur, which is long and close, is the same; the legs and under parts of the body are yellowish; inside of the ears and end of the lower lip white; blackish round the nose; the white space on the buttocks is much larger than in the *C. capreolus*. Blasius, however (see 'Wirbelth. Deutschl.'), does not admit this as a distinct species.

It inhabits the mountainous thickets of Russian Tartary near the Volga and Ural rivers.

Genus **ANTILOPE.**

Grinding teeth six on each side in each jaw. Horns persistent, growing on a bony core, rounded; ears large and pointed; tail short or moderate.

Antilope Saïga.

Antilope Saïga, DESM. Mamm. Sp. 691; PALLAS, Zoog. Ross. As.

DESCRIPTION.—Horns, in the male only, yellow, transparent, with from sixteen to eighteen perfect rings, smooth near the points, as long as the head; sometimes there is a third horn, or only one (Desmarest); nose thick, swollen, compressed laterally, furrowed or wrinkled transversely; the nostrils very open, velvety at their edges; ears moderate. Fur in summer smooth, of a greyish-yellow colour; in winter the hairs are longer, and the colour greyish white. In size about equaling the Fallow Deer, but less elegantly formed, being rather thick and short.

Length of head and body upwards of 4 feet; tail, $3\frac{1}{2}$ inches.

The Saïgas collect in autumn into vast herds, containing several thousand individuals; they then migrate into milder regions for the winter. They are fond of aromatic or bitter plants, are easily fatigued in the chase, and the great prominence of the nose or snout is said to oblige them to walk backwards, or to grasp the herbage sideways when grazing: they are easily tamed. The female produces but one at a birth, about the month of May.

This species inhabits parts of Poland and Little Russia, Wallachia, and Moldavia, and the other countries bordering on the Black Sea, but is nowhere common west of the Volga.

Most abundant between that river and the Irtysh, seldom passing north of the 55th degree of latitude.

Antelope rupicapra.

Antelope rupicapra, DESM. Mamm. Sp. 731 ; PALLAS, Zoog. Ross. As.

Capella rupicapra, KEYS. u. BLAS. Wirbelth. Europ. p. 28.

The Chamois of the Alps. The Izard of the Pyrenees.

DESCRIPTION.—Horns in both sexes, those of the male the larger, black, rounded, smooth, perpendicular to the head, and abruptly hooked backwards near their points; the two central cutting teeth longer than the others; no tear-furrows; a cavity in the skin at the base of each horn on the inside; a black streak runs along the spine. Fur long and thick, dark brown on the body in winter, becoming somewhat grey in the spring and tawny brown in summer; the hairs are grey at their base at all times; head pale yellow, excepting a band of dark brown which begins near the nose, surrounds the eye, and ends near the base of the horn and ear; the tail is black, a space on each side of it white; hoofs concave beneath, with the edge, especially on the outer side, projecting. The females are smaller than the males.

Length of head and body, 3 feet 4 inches; head to root of horns, $6\frac{1}{2}$ inches; ears, $4\frac{1}{2}$ inches; tail, without the hair, $3\frac{1}{2}$ inches; height at the shoulder rather more than 2 feet.

The female goes with young between seven and eight months, and produces one at a birth. The Chamois frequents the highest Alpine regions, living in small herds of from three to six.

It is found in the Alps of Switzerland, France, Piedmont, the Tyrol, Bavaria, and Salzburg; in the Apennines and Carpathians, and, according to Desmarest and Blasius, in Greece, and some of the islands of the Archipelago; also in the Pyrenees, where the animal undergoes some varia-

tion in form and colour, though not sufficient to constitute a distinct species. Schinz, in his 'Europäische Fauna,' vol. i. p. 86, states the differences thus:—"In the Pyrenean animal the horns are shorter, smaller, more slender, and incline rather more outwards. The limbs are finer, and the entire animal somewhat more delicately shaped. The black dorsal streak altogether disappears in summer, and the hair is then redder. The winter coat is not nearly as long, and is of a grey-red colour; and the band surrounding the eye is at all seasons rather less conspicuous." According to Widdrington, the Iazard is found in great abundance on the Spanish side of the Pyrenees.

Genus **CAPRA.**

Grinding teeth six on each side in each jaw. Horns generally present in both sexes, directed upwards and backwards, persistent, hollow, rough, and angular. No tear-furrows; tongue smooth; tail short; chin bearded.

Capra Ibex.

Capra Ibex, DESM. Mamm. Sp. 735; PALLAS, Zoog. Ross. As. ?; SCHINZ, Europ. Faun. vol. i. p. 86.

Le Bouquétin, BUFFON; *Der Steinbock der Centralalpen*, SCHINZ, Europ. Faun.

The Ibex.

DESCRIPTION.—The horns of the male are curved in the form of a crescent, subquadrangular, very strong and thick, wrinkled transversely, flattened and knotty in front, directed obliquely backwards and outwards. In the female, smaller, compressed, and but slightly nodose. The beard is short and very open, and in summer wanting. The fur at that season is short, lying close to the body, without any undercoat, of an ashy-grey colour above; in winter, on the same

parts, it becomes longer, reddish brown, with a thick underfur; a dark line runs along the back; the under parts are dull white, separated from the darker tints of the back and sides by a brown line; on each side of the tail is a whitish space.

Length of head and body, 4 feet 10 inches; horns, measured along the curve, 2 feet 8 inches; tail, $6\frac{1}{2}$ inches; height at shoulder, 2 feet 8 inches.

The Ibex goes in small herds, frequenting the loftiest mountains. The female produces one or two young at a birth, after about six months' gestation.

It is found, though now but very rarely, in the Alps, where, according to Von Tschudi, it is confined to the mountains between the Vallais and Piedmont, the Monte Rosa, and parts of Savoy. In Zawadsky's 'Fauna of Galicia and the Bukovina,' it is said still (1840) to exist in the Central Carpathians, but to have been almost extirpated by poachers. It is doubtful if the Ibex of Siberia (Pallas) be the same species.

Capra Pyrenaica.

Capra Pyrenaica, SCHINZ, Europ. Faun. vol. i. p. 86.

Ibex Pyrenaica, GERVAIS, Zool. et Paléon. Franc.

Ægoceros Pyrenaica, GRAY, Brit. Mus. Catalogue, Mamm. part 3.

Der Steinbock der Pyrenäen, SCHINZ, *l. c.*

The Pyrenean Ibex. Pyrenean Tur.

DESCRIPTION.—The horns in the male are keeled behind, rounded in front, with numerous sharp knots along their whole length; they are compressed and twisted, at first ascending, then inclining outwards with a pear-shaped section. In the female they are smaller, flattened before and behind, but slightly ribbed, and running in a simple curve to the tips, not twisted. The beard is short, but strong and directed backwards; the head in front, back,

and sides are brownish ash-grey; the sides of the head, neck, outer surface of the legs, and sides of the belly black; belly, hinder portion of the fore-legs, and a spot on the hind-feet pure white; a line along the back and the tail blackish; ears yellow-brown.

The following dimensions of the two species, as well as the foregoing description, are from Schinz's 'Europ. Fauna':—

| | <i>C. Ibex.</i> | <i>C. Pyrenaica.</i> |
|----------------------------|------------------|----------------------|
| Head and body . . . | 3 ft. 5 to 7 in. | 5 ft. 1 in. |
| Tail | 0 ,, 4½ in. | 0 ,, 8 ,, 5 lin. |
| Height at the shoulder . . | .. | 2 ,, 8 ,, |
| Horns along the curve . . | .. | 2 ,, 6 ,, |

The most obvious distinction between this and the last species would appear to consist in the difference of size, the shape of the horns, and in the beard. Blasius, notwithstanding, considers the *C. Pyrenaica* to be merely a variety of the Swiss Ibex. It is not known what change, if any, in the colour of the fur occurs during the year.

The Pyrenean Ibex inhabits, as its name imports, the Pyrenean range, but now only on the Spanish side, and there but in small numbers (Widdrington). The Ibex of the Sierra Nevada, and of the mountains near Ronda, is probably of this species; that of the Island of Crete is more likely to differ; both these points, however, remain to be cleared up, and deserve the attention of travellers.

Genus **OVIS**. SHEEP.

Six grinding teeth in each jaw on each side; incisors equal; horns hollow, persistent, rough, and angular, more or less spirally twisted; chin without a beard; an open sac or fossa at the base of the toes on each foot.

Ovis Musmon.

Ovis Aries, DESM. Mamm. Sp. 741.

Ovis Musmon, KEYSERLING und BLASIUS, Wirbelth. Europ.

Ovis Musimon, SCHINZ, Europ. Faun. vol. i. p. 88.

Capra Musmon, BUON. Faun. Ital.

Muffione of Sardinia, *Muffoli* of Corsica.

The Wild Sheep, or Musmon.

DESCRIPTION.—Horns very large and strong, wrinkled principally at their base, arching backwards, and curled round, of a greyish-yellow colour ; ears moderate, straight, pointed, only a trace of tear-furrow ; body compact, muscular, rounded ; tail very short, naked beneath ; under-fur woolly, fine, grey, and twisted like a corkscrew ; the upper fur is silky, but short and rather stiff ; general colour of the upper parts and outside of legs dull rufous, mixed with some black hairs ; a line along the back of a darker colour ; the under part of the neck to the chest, the lower part of the fore-legs in front, and the tail, as well as the front and sides of the face, blackish ; a line of the same colour extends from one corner of the mouth to the other, passing below the eye ; a space beneath the eyes, the belly, a patch on each side of the tail, and the edges of the tail are white ; on the middle of each flank is a large spot of very pale rufous ; the inside of the mouth, the tongue, and the nostrils are black. In winter the fur becomes darker and more dense. The female differs from the male by the smaller size of her horns, or more commonly by their entire absence ; and is altogether smaller than the other sex.

Length of head and body (male), 3 feet 4 inches ; tail, $3\frac{1}{2}$ inches ; horns, 1 foot 11 inches ; height at the most elevated part of the back, 2 feet 3 to 5 inches.

The Musmon inhabits the highest and least accessible mountains, but always in temperate climates ; it lives in herds, which are sometimes composed of one hundred in-

dividuals. The males are polygamous. The female goes with young five months, producing two at a birth.

Is found in the most elevated parts of the Islands of Sardinia and Corsica, in the province of Murcia in Spain, and in some of the Greek islands, including Cyprus, according to Desmarest.

Genus **BOS.**

Six grinding teeth in each jaw on each side. Horns persistent, hollow, growing on a bony core ; body thick and heavy ; tail long, terminated by a tuft of hair ; no tear-furrows ; teats four in number.

Bos Urus.

Bos Urus, DESM. Mamm. Sp. 747 ; SCHINZ, Europ. Faun. vol. i. p. 89 ;
KEYSERLING und BLASIUS, Wirbelth. Europ.

The Aurochs.

DESCRIPTION.—Horns short, thick, polished, inclining outwards ; forehead arched, broader than it is high ; the occipital crest projecting behind the base of the horns ; teats arranged in a square, not in a single line, as in the Buffalo and Yâk ; the neck is thick and short, a hump or boss on the shoulders, which, with the head and breast, are covered with long curled hair ; beneath the throat is a long pendent beard ; tail long, but shorter than in the domestic breeds, with a tuft of hair at its extremity. General colour of the body dark brown, or almost black.

Length of head and body, 10 feet 3 inches ; height at shoulders, 6 feet ; length of horns, 1 foot ; tail, without the hairs, 2 feet.

The Aurochs is not now known to exist in any other part of Europe than Lithuania, where it is very strictly protected by the Government. In 1846 several herds inhabited the great forest of Bielowiza in the government

of Grodno, whence a pair was sent by the Emperor of Russia to the Zoological Society of London in that year. It is found also in the Caucasus.

Bos Scoticus.

Bos Scoticus, *Urus Scoticus*, BELL, Brit. Quad.

Urus Scoticus, HAMILTON SMITH.

The Chillingham Wild Ox.

DESCRIPTION.—This species is preserved in a few parks in the North of England and South of Scotland, of which the two principal are that of Chillingham in Northumberland, and Hamilton in Lanarkshire. In the former locality the colour is invariably white over the body ; the muzzle black ; the whole of the inside of the ear, and about one-third of the outside, from the tip downwards, red ; the horns are very fine, long, and white, with black tips ; the head and legs slender and elegant. The weight varies from fifty to sixty stone.

The Hamilton breed is larger and more robust, and differs also in colour and markings ; the body being dun-white, the inside of the ears, muzzle, and hoofs black, and the fore-part of the leg, from the knee downwards, mottled with black. The cows are seldom horned. Their bodies are thick and short, their limbs stouter, and their heads much rounder than in the Chillingham cattle ; the roof of the mouth is black, or spotted with black ; the tongue tipped with black.

There seems no reason to doubt that this species is descended from the wild race of cattle which existed in the woods of Britain at the arrival of the Romans.

Order CETACEA.

Form of the body fish-like ; anterior extremities in the form, and with the uses, of fins ; hinder extremities wanting ; tail horizontal ; teeth various, sometimes entirely absent.

Genus DELPHINUS.

Both jaws furnished with numerous simple teeth ; snout produced into a beak, separated from the forehead by a depression ; a dorsal fin.

Subgenus 1. DELPHINUS.

Delphinus Delphis.

Delphinus Delphis, DESM. Mamm. Sp. 758 ; BELL, Brit. Quad.
Common Dolphin.

DESCRIPTION.—The teeth vary in number according to age, from thirty-two to forty-seven on each side in each jaw ; they are sharp, slightly incurved, and lock with the teeth of the opposite jaw ; the orifice of the ear is scarcely larger than a pin-hole ; the blow-hole is crescent-shaped ; the jaws are nearly of equal length, moderately produced ; the colour is blackish on the back, greyish on the sides, and glittering white beneath ; the female produces a single young one at a birth ; while suckling, the mammary glands are much enlarged, and the teats crested.

Length, from 6 to 8, rarely 10 feet.

It is common on the coasts of the British Islands, and is found in all the European seas, Mediterranean, Baltic, &c.

Delphinus Tursio.

Delphinus Tursio, DESM. Mamm. Sp. 761; BELL, Brit. Quad.;
F. CUVIER.

Bottled-nosed Dolphin.

DESCRIPTION.—Teeth from twenty to twenty-four on each side in each jaw, conical, sharp, and slightly bent backwards; dorsal and pectoral fins of equal length, and shorter in proportion than in most species; the blow-hole is single, of a half-oval form, the convex part being turned forward; the colour is black above, whitish beneath; the separation of the two colours is not abrupt.

Usual length, about 11 feet, sometimes much less.

This rare Dolphin inhabits the North Sea; has been taken a very few times on the coast of England and Ireland; and in the Mediterranean, on the French coast, occasionally (Crespon).

Subgenus 2. DELPHINORHYNCHUS.

Delphinus rostratus.

Delphinus rostratus, F. CUVIER, Cetacea.

Delphinorhynchus Bredanensis, HAMILTON, Nat. Lib. vol. vii.

Steno? rostratus, GRAY, Cat. Brit. Mus. Cetacea, 1850.

The Beaked Dolphin.

DESCRIPTION.—Teeth from twenty-one to twenty-three on each side in each jaw, rather large; dorsal fin elevated, placed near the middle of the body; pectorals scythe-shaped; the tail crescent-shaped, and curved in the middle; the profile of the head insensibly loses itself in that of the snout; all the upper parts of the body sooty black, the lower rosy white: the junction of the two colours is quite irregular.

Length of a specimen stranded at Brest, about 8 feet.

It is said to inhabit the North Sea, and to have been taken on the coast of Holland. Very little is known of this species.

Delphinus leucopleurus.

Delphinus leucopleurus, NILSSON, Skand. Faun.

Lagenorhynchus leucopleurus, GRAY, Cat. Brit. Mus. Cetacea, 1850.

White-sided Bottle-nosed Dolphin.

DESCRIPTION.—Head gradually sloping into the back, which is very short, depressed, and tapering; lower jaw rather the longer; body largest at the fins, tapering behind; pectorals rather far back and elongate, slightly falcate; dorsal high, falcate, rather behind the middle of the back; on the back near the tail, is a low, rounded, fin-like ridge; lobes of the tail rather narrow, elongate; teeth 28 on each side in the upper jaw, 25 on each side in the lower jaw, small, sharp, curved. Colour of the upper parts bluish black, beneath white, with a large, oblique, grey, or white longitudinal streak on the hinder part of each side.

The following are the measurements of a female from the Orkneys, May 1835, as given by Gray:—Length from snout to centre of tail, 6 feet $5\frac{1}{4}$ inches; free portion of pectoral fin, 10 inches; tail, from tip to tip, 14 inches; from snout to angle of mouth, 9 inches; length of cranium, 15 inches; of spinal column, $55\frac{1}{2}$ inches; vertebræ, 81; cervical, 7; dorsal, 15; posterior, 59. Teeth, $\frac{30-30}{30-30}$. The external opening of the nostrils near the top of the head was crescent shaped, and placed transversely; weight, 14 stone.

This species inhabits the North Sea and the coasts of Greenland, and has been taken off the Orkneys, and in the Gulf of Christiania in Norway.

Delphinus albirostris.

Delphinus albirostris, GRAY, Ann. and Mag. Nat. Hist. 1846.

Delphinus Ibsenii, NILSSON, Skand. Faun. i. 600.

Lagenorhynchus albirostris, GRAY, Cat. Brit. Mus. Cetacea, 1850.

White-beaked Bottle-nose.

DESCRIPTION.—Appears closely to resemble the last species in general form and proportions. The beak is rather longer; teeth, $\frac{25-25}{24-24}$, small, curved; jaws moderately elongate; blow-holes horseshoe-shaped, convex towards the head; upper parts and sides very rich deep velvet black; nose a well-defined line above the upper jaw; the whole under jaw and belly cream-colour, and varied with chalky white; fins and tail black; external cuticle soft and silky, so delicate as to be easily rubbed off.

The following are the measurements of a specimen from Yarmouth:—Entire length not given; mouth, 9 inches 6 lines; nose to eye, 13 inches; length to pectorals, 20 inches; of pectoral, 15 inches; to dorsal, 41 inches; dorsal, $11\frac{1}{2}$ inches; height of dorsal, 10 inches; width of tail, 22 inches.

Inhabits the North Sea, and has been taken on the coast of Norfolk.

Genus PHOCÆNA. PORPOISE.

Both jaws furnished with numerous simple and equal teeth; head blunt, not beaked; a dorsal fin.

Subgenus PHOCÆNA.**Phocæna communis.**

Delphinus Phocæna, DESM. Mamm. Sp. 770.

Phocæna communis, F. CUVIER; BELL, Brit. Quad.

Common Porpoise.

DESCRIPTION.—Teeth twenty-two to twenty-five on each side in each jaw, straight, compressed, and rounded at their

summits; snout short, rather obtuse at the tip; under jaw rather longer than the upper; eyes small, almost on a line with the mouth; pectoral fins placed low down, oval, and somewhat pointed; dorsal rather beyond the middle of the body; skin smooth, dusky on the back, whitish on the belly, the colours meeting on the sides.

Length from 4 to $5\frac{1}{2}$ feet.

Common in the British Seas, the Baltic, and in the adjoining parts of the Atlantic Ocean. Inhabits the Mediterranean and Black Seas, and the Sea of Azoph.

Phocæna Orca.

Phocæna Orca, F. CUVIER, Hist. Nat. Cet.; BELL, Brit. Quad.

Delphinus Grampus, DESM. Mamm. Sp. 774.

The Grampus.

DESCRIPTION.—Much larger than the last species; snout very short and obtuse; upper jaw somewhat longer than the lower, which, however, is broader than the upper; teeth varying in number with the age of the animal, generally twenty-two in each jaw, unequal, conical, a little bent at the summits; eyes almost in the same line with the mouth; dorsal fin nearly in the middle, very much elevated, pointed at the extremity; pectorals very broad, oval; tail crescent-shaped; skin smooth, glossy black above, white beneath. The two colours separated by a well-defined line on the sides; an oval white spot behind each eye.

Length, from 20 to 25 feet.

The Grampus goes in large herds, is frequently seen off the northern parts of the British Islands, and occasionally in the more southern regions. Is very numerous in the North Seas. Sometimes visits the French coasts of the Bay of Biscay. One taken near Cette, in the Mediterranean, is mentioned by Gervais, 'Zoologie et Paléontologie Française,' vol. i. p. 148.

Phocæna melas.

Phocæna melas, BELL, Brit. Quad.

Phocæna globiceps, F. CUVIER, Hist. Nat. Cet.

Delphinus globiceps, DESM. Mamm. Sp. 777.

Delphinus deductor, SCORESBY.

Round-headed Porpoise or Caaing Whale.

DESCRIPTION.—The head is short and round, with the forehead remarkably convex and prominent; upper jaw projecting a little beyond the lower; teeth conical, sharp, a little bent, varying in number with the age of the animal, generally from eighteen to twenty-six in each jaw; eyes very small; the blow-hole single, placed in a hollow towards the back of the head, crescent-shaped, the horns directed forwards. The dorsal fin is 4 feet long, and 15 inches high, placed about the middle of the body; pectorals narrow and elongated, more than in any other known cetaceous animal, being upwards of 5 feet in length, and only 1 foot 6 inches broad; caudal fin about 5 feet broad, deeply divided in the middle. The general form of the body is rather elongated, tapering towards the tail. The colour of the whole animal rich deep black, except a white band extending from the throat to the vent. Skin very smooth, shining like oiled silk.

Length, from 16 to 24 feet.

Goes in herds of from 100 to more than 1000 individuals, the whole of which are sometimes captured when one of them happens to be cast ashore, from their habit of following each other. Their favourite food appears to be the cuttle-fish.

Is common around the Orkneys and other Scotch Islands, the North of Ireland, Iceland, and the North Sea in general. Is sometimes taken on the north coast of France. Said by Risso to visit the Mediterranean and the shores of Nice yearly in summer.

Phocæna grisea.

Phocæna grisea, LESSON, Nat. Lib. vol. vii. (figured).

Delphinus griseus, DESM. Mamm. Sp. 775 ; F. CUVIER, Cetacea.

Grampus Cuvieri, GRAY, Cat. Brit. Mus. Cet. 1850.

DESCRIPTION.—Head large, obtuse, somewhat rounded ; the upper jaw several inches longer than the lower ; the teeth of the upper jaw fall out while it is still young, as do many of those of the lower jaw. The most usual dental formulary is said to be $\frac{0-0}{4-4}$. The dorsal fin commences about the middle of the back, is elevated and pointed, but is lower and placed further back than in *P. Orca* ; pectorals very much developed ; the tail large. Colours, bluish black above, dull white beneath, merging into each other on the sides.

Total length, 10 or 11 feet. In an individual of 10 feet long (see Gray's Catalogue), the length of the pectorals is 3 feet ; height of dorsal, 1 foot 2 inches ; entire length of skull, $17\frac{1}{2}$ inches.

Resembles the *Phocæna melas* somewhat in appearance and habit, but is much smaller, and its dorsal fin is much more elevated.

Inhabits the North Sea ; has been taken in a few instances on the north coast of France, once at Brest, then at Aiguillon in La Vendée, in 1822 ; and one on the Isle of Wight in 1845.

Phocæna Rissoana.

Phocæna Rissoana, LESSON.

Delphinus Rissoanus, DESM. Mamm. Sp. 778.

Grampus Rissoanus, GRAY, Cat. Brit. Mus. Cet.

DESCRIPTION.—Teeth conical, early deciduous, especially those of the upper jaw. In the individual here described, taken at Nice, there were in all only ten teeth, viz. five on

each side towards the front of the lower jaw. The head blunt and somewhat rounded; dorsal fin rather elevated, placed nearer to the tip of the tail than to the end of the nose; pectorals large, pointed, set on low. Colour blackish above, with many irregular lines of a lighter colour, white beneath; at the base of the pectorals is a kind of oval mark of the same shade with the above mentioned lines on the back. One of the Nice specimens has the dorsal, pectorals, tail, and hinder part of the body below, varied with black. The females are said to be of a uniform brown colour, with irregular lines, as in the males.

Entire length, 9 feet; head, $18\frac{1}{2}$ inches; height of dorsal, 9 inches.

Does not appear to be known anywhere except in the Mediterranean, off the coasts of Piedmont.

Genus **BELUGA.**

The genus *Beluga* differs from *Phocæna* only in the absence of a dorsal fin (Cuvier, Règ. Ann.).

Beluga leucas.

Beluga leucas, BELL, Brit. Quad.

Delphinus leucas, DESM. Mamm. Sp. 779.

Delphinapterus leucas, GERARD.

Delphinapterus albicans, JENYNS, Man. Brit. Vert.

DESCRIPTION.—Head broad and blunt; teeth eight or nine on each side, above and below, short and blunt; the gape is narrow; the upper jaw a little overhangs the lower; old individuals are found without any teeth in the upper jaw; pectoral fins short, thick, oval; caudal fin very broad and powerful; no dorsal fin. The colour of the young animal is bluish grey, changing to white with age; the adult is quite white.

Length over all in a straight line, 13 feet 4 inches length following the curve of the back, 14 feet 5 inches ; length of pectoral, 2 feet ; breadth of tail, 3 feet.

The flesh is eaten by the inhabitants of the most northern coasts.

The Beluga is confined to northern latitudes ; is common and gregarious on all the coasts of the Arctic Ocean, especially near the mouths of rivers, which it ascends for many miles. It is a very rare visitor to the British Seas ; one was taken in the Frith of Forth in the summer of 1815.

Genus **HYPEROODON.**

Snout produced and depressed ; the forehead much elevated ; the teeth only two in number, in the anterior part of the lower jaw ; a dorsal fin.

Hyperoodon Butzkopf.

Hyperoodon Butzkopf, BELL, Brit. Quad.

Delphinus hyperoodon, DESM. Mamm. Sp. 784.

Hyperoodon bidens, JENYNS, Brit. Vert.

Heterodon diodon, KEYS. und BLAS. Wirbelth. Europ.

The Bottle-head.

DESCRIPTION.—Two teeth only in the fore part of the lower jaw ; the body elongated, its greatest circumference in the region of the pectoral fin ; forehead high, very convex, rising suddenly from the snout, which is short and depressed, terminating in a kind of beak, somewhat like that of the true Dolphins ; lower jaw rather longer and larger than the upper ; teeth conical and pointed, sometimes wanting, or not appearing above the gums ; palate studded with little horny eminences, considered by Cuvier as rudiments of whalebone ; eyes large, a little above the line of the lips ; blow-hole crescent-shaped, with the horns directed towards the tail ; dorsal fin placed considerably beyond the

middle of the body, but little elevated, lanceolate, pointed, directed backwards; pectorals small, oval, in the same horizontal line with that of the mouth; skin smooth and glossy; blackish lead colour above, whitish beneath, the two colours intermixing on the sides.

Entire length, from 20 to 25 feet.

Two individuals of this species were taken near Honfleur, in France, in 1788. Two more have been stranded near Caen, one of them in 1842, the skeletons of which are in the Paris and Caen museums. One was taken on the Dutch coast in July 1846. The Bottle-head has been taken a few times on the east coast of England, and more frequently on the north-east coast of Ireland. In the 'Illustrated London News' of February 17, 1855, is an account of an individual taken a short time previously in Solway Frith, which measured 25 feet in length, with a girth of 16 feet.

Hyperoodon Desmarestii.

Delphinus Sowerbyi, DESM. Mamm. Sp. 785.

Hyperoodon Desmarestii, GRAY, Cat. Brit. Mus. Cetacea, p. 69.

Delphinus Desmarestii, RISSO, F. CUVIER.

Ziphius cavirostris, GERVAIS, Zool. et Paléont. Franc. vol. i. p. 154.

Diodon Sowerbæi, BELL, Brit. Quad.

DESCRIPTION.—The two teeth of the lower jaw large and conical, nicked near the tip; head not swollen, ending in a long nose; upper jaw shorter, toothless; lower much longer, and bent up; eyes small, oval; blowers large, semilunar; pectoral fins short, dorsal rather beyond the middle of the back, nearly above the vent; caudal fin broad, festooned.

Length, nearly 16 feet.

“Differs from the last species in the forehead not being swollen, and in the lower jaw being produced and bent up,

in the pectorals being pointed, the dorsal more obtuse, and the body streaked with white; the colour of the upper parts is steel-grey, with numerous irregular white streaks; white beneath; tail slender, long, keeled, rounded on the belly." [The foregoing account is from Gray's Brit. Mus. Cat., quoted from Risso.]

It is said by Gray to be common near Nice in March and September. One was stranded on the French coast, in the Department of the Herault, in 1850, recorded by Gervais, who looks upon this species as identical with the *Hyperoodon Doumetii* of the coast of Corsica.

N.B.—It would appear to be the same with the *Delphinus Sowerbyi* of Desmarest, or the *Diodon Sowerbæi* of Bell.

Genus **MONODON.**

Teeth two in number, one generally remaining undeveloped in the jaw, the other stretching forwards in a line with the body, long, straight, spirally twisted; no dorsal fin.

Monodon monoceros.

Monodon monoceros, DESM. Mamm. Sp. 787; BELL, Brit. Quad.; SCHINZ, Europ. Faun. vol. i. p. 94.

Ceratodon monodon, KEYS. u. BLAS. Wirbelth. Europ. p. 74.

The Narwhal, or Sea Unicorn.

DESCRIPTION.—One tooth only developed, of great length, sometimes exceeding 6 feet, with a few instances where it has reached even 10 feet, spirally twisted, quite straight, tapering to a blunt point, composed of very hard and white ivory; the outline of the head varies in different individuals, according to the amount of fat on the forehead; the first half of the body is nearly cylindrical, the rest conical; in this latter portion there is a low dorsal and ventral ridge, and less distinctly marked lateral ridges, giving

it a subquadrangular form ; the pectoral fins are very small, and there is no dorsal fin, so that the tail forms the only effective means of progression ; the general colour is yellowish white, with numerous blackish spots of various sizes and figures ; in the young the spots are less distinct, or confluent, and the ground colour is blackish grey.

The length of the body, without the tooth, of a middle-sized adult individual, is 15 feet ; of the tooth, 5 feet 6 inches ; length of the pectoral fin, 13 inches ; breadth of the tail, 3 feet 1 inch.

The Narwhal is a very powerful and active creature, swimming with great swiftness ; feeds on molluscous and other soft animals ; appears in herds of about six together. The blubber is often half a ton in weight, and yields a large proportion of fine oil.

It inhabits the Northern Seas, seldom coming so far south as even the northern islands of Scotland. It has been observed on the British coasts only three or four times.

Genus **PHYSETER.**

Head enormously large, truncated in front ; perfect teeth in the lower jaw only ; in the upper jaw either wanting or few, and rudimentary.

Physeter macrocephalus.

Physeter macrocephalus, KEYS. u. BLAS. Wirbelth. Europ. p. 74 ;

SCHINZ, Europ. Faun. vol. i. p. 95 ; BELL, Brit. Quad.

Spermaceti Whale. Common Cachalot.

DESCRIPTION.—The head is of enormous size, forming about half the entire bulk, the body tapering from it to the tail ; the back is smooth, with one or two low protuberances ; the upper jaw, which overhangs the lower by four or five feet, is without visible teeth, but there are a few concealed

within the gums; the lower jaw is very narrow, the two branches being in contact throughout the greater part of its length, with from twenty to twenty-five small conical teeth on each side, according to the age of the animal; the eye is small; the eyelids are furnished with a few stiff hairs; the pectoral fins are small, and slightly grooved longitudinally; the caudal fin very broad, divided at the middle into two equal lobes; the general colour is greyish black above, lighter beneath.

The entire length of this huge animal sometimes reaches 70 feet.

Inhabits the Northern Seas, where it is extensively fished for; has occurred a few times on the British coasts, and occasionally finds its way into the Mediterranean.

Professor Bell, in his 'History of British Quadrupeds,' states, that from repeated reported instances of *Spermaceti Whales* having been seen with a very high narrow dorsal fin, he is of opinion that a second species of *Physeter* exists, to which he applies the name *Physeter Tursio*, or High-finned Cachalot.

Genus **BALÆNA.**

The head very large. Palate furnished with baleen or whalebone. No teeth; no dorsal fin. These are the true Whales.

Balæna mysticetus.

Balæna mysticetus, DESM. Mamm. Sp. 798; KEYS. u. BLAS. Wirbelth. Europ. p. 75; BELL, Brit. Quad.

Common or Greenland Whale.

DESCRIPTION.—The head, though large, is smaller in proportion than in *Physeter*; the upper jaw, which is very narrow, is furnished, in the place of teeth, with numerous horny laminæ, the whalebone of commerce, descending perpendicularly from the palate. This apparatus serves as

a strainer for the food, which consists of molluscos, radiate, or crustaceous animals, with which the ocean in some parts abounds, and which are taken in by the Whale with open mouth, the water accompanying them being discharged through the plates of whalebone. The body is bulky forwards, largest about the middle, and taper rather suddenly towards the tail. The head is narrow above, very broad, flat, and rounded beneath; it occupies one-third of the entire length. The line of meeting of the upper and lower lips appears in front in the form of the letter U. The eyes are remarkably small. The external opening of the ears is scarcely perceptible. Pectorals of moderate size, placed about two feet behind the angle of the lips. The tail is of great breadth, semilunate on its anterior margin, deeply divided in the middle. The anterior part of the body is nearly cylindrical, the hinder portion rhomboid. General colour blackish grey; the front of the lower jaw and part of the throat and belly white.

The usual length is from 50 to 65 feet, and the greatest girth from 30 to 40 feet.

Abounds in the Northern Seas, where great numbers are taken every year for the sake of their oil and whalebone, one animal sometimes yielding twenty tons of oil, and whalebone twelve feet long.

Is not of very uncommon occurrence on the British and other coasts of Northern and Western Europe, and of the Mediterranean Sea.

Genus **BALÆNOPTERA.**

Head somewhat depressed, rather slender; palate furnished with short plates of whalebone; no teeth; a dorsal fin; longitudinal folds on the throat and belly.

Balænoptera Boops.

Balænoptera Boops, KEYS. u. BLAS. Wirbelth. Europ. p. 75; BELL, Brit. Quad.

Balæna rostrata, SCHINZ, Europ. Faun. vol. i. p. 96.

Northern Rorqual, or Fin-fish.

DESCRIPTION.—The Rorqual differs from the true *Balæna* in the general form of the body, which is more elongated; the head in particular is more slender and attenuated at the muzzle; the presence of a dorsal fin is also a distinguishing mark. From the lower lip to the abdomen run a number of longitudinal folds of skin, which are said to have given the animal its name of Rorqual, signifying, in the Norwegian language, a Whale with folds. The whalebone is comparatively short, and the yield of oil less plentiful than in the other Whales.

It is the largest of the family, and consequently of all living animals, sometimes reaching the enormous length of 80 or 100 feet.

It feeds not only upon mollusca and small crustacea, but also upon fish of considerable size. Is of not unfrequent occurrence on the British coasts, being often seen off the Orkneys and Shetland, and is very common in the Northern Seas.

Class REPTILIA. REPTILES.

VERTEBRATE animals, with cold blood; the heart with one or two auricles, and one ventricle; oviparous; breathing by lungs, or by lungs and gills; the body covered with shelly plates, or with scales, or with a soft, naked skin.

Order TESTUDINATA. (TORTOISES.)

The body is enclosed in a double shield, the head, neck, limbs, and tail alone being free; the upper shield, or carapace, is formed by the union of the ribs and dorsal vertebræ; the lower one, or plastron, by the pieces of the sternum. The jaws are horny, without true teeth. The feet four in number.

Genus TESTUDO. LAND TORTOISES.

Carapace bulged, supported by a solid, bony frame-work, and soldered by the greater portion of its lateral edges to the plastron (or under shell). Legs truncated; toes very short, united almost to the nails, of which there are five to the fore-feet and four to the hinder feet, all thick and conical.

Testudo marginata.

Testudo marginata, DUM. et BIB. vol. ii. p. 57.

Chersus marginatus, BUON. Faun. Ital. (figured).

DESCRIPTION. — Carapace oblong, oval, much arched or vaulted, with the hinder portion of its margin, in adults,

very broad, and almost horizontal; provided with a neck-plate; the caudal plate is simple, the plastron moveable behind. In the young the carapace is not dilated behind; the plates of the disk, and the front half of those of the margin, are blackish brown, with the centre of the former and the hinder portion of the latter yellow; the body beneath is of the same colour, with a large triangular black spot on six or eight of the plates; the tail is thick, short, conical, scarcely reaching beyond the carapace; the head, upper part of the neck and tail, and the outside of the hind-feet are deep black; the caudal region beneath, thighs, and neck below pale orange, clouded with dark brown.

It is the largest of the three European Tortoises, but seldom exceeds one foot in total length.

The extended hind margin of the carapace is the chief mark of distinction between this and the allied species.

This Tortoise is found in Greece, where it is at least equally common with the *T. Græca*. It is said by Schinz to occur also in Candia. In Egypt and Barbary less common than *T. Mauritanica*.

Testudo Mauritanica.

Testudo Mauritanica, DUM. et BIB. vol. ii. p. 44.

Testudo ibera, PALLAS, Zoog. Ross. As.

DESCRIPTION.—Carapace oval, vaulted, one-third longer than its breadth in full-grown individuals, provided with a neck-plate; the caudal plate simple; the plates of the margin inclined backwards; on each thigh is a large conical tubercle; these and the shorter tail are sufficient to distinguish it from *T. Græca*. The plastron is moveable behind; the tail is short, and without a nail at its tip; the horny gums are quite without dentations in the adult; the young, however, has three small ones in the lower jaw, which disappear with its growth. The carapace is olive,

with a black band along the front and sides of each plate of the disk, on the surface of which are several black spots, and a black space in the centre of each plate; sometimes, however, the black band is wanting; on each plate of the plastron is a large black spot on an olive ground; the inside of the fore-feet, upper parts of the hind-feet, and of the neck, the tail, and parts adjoining are grey-brown, becoming lighter on the thighs and neck; the jaws are black.

The *Testudo Mauritanica*, which is very common in Barbary and Algeria, is found in Europe only on the shores of the Caspian, and in the valleys of the South of the Crimea. Many are sent from Africa to Paris, where they are kept in gardens, feeding on roots and leaves, preferring those of the lettuce.

Testudo Græca.

Testudo Græca, DUM. et BIB. vol. ii. p. 49; BUON. Faun. Ital.

DESCRIPTION.—The carapace is vaulted, oval, entire, rather larger behind than before, with a neck-plate; the caudal plate is double, much inclined, and sometimes curved in towards the tail, which latter is long, and ends in a nail; the plastron is not moveable behind; the scaly tubercles on the front of the fore-legs are not nearly so strong as in the two preceding species, and there is no large conical tubercle behind the thighs. The marginal plates of the carapace have triangular spaces of a deep black, the central plates are spotted in their centres with the same colour, and a black band runs along three of their sides, the hinder edge remaining always yellow; the sides and central line of the plastron is yellowish green, the rest black. The general colour of the body is greenish; the markings vary in form and arrangement in different individuals, and also with the age of the animal.

Entire length about 1 foot.

Feeds on vegetables, and seems to prefer sandy situations. The Greek Tortoise appears to be confined to a portion of Southern Europe, viz. Greece, Italy, and the principal islands of the Mediterranean and the South of France. Very common in Sicily and around Rome. Pallas records it as inhabiting the neighbourhood of the Caspian Sea.

Genus **EMYS**. FRESHWATER TORTOISES.

The animals of this genus are distinguished from those of the preceding chiefly by the greater separation of the toes, which are terminated by longer nails, and have their intervals filled up by membranes. There are five nails to the fore-feet, and four to the hinder. Their form is generally flatter than in the Land Tortoises, and they feed on insects and small fish.

Emys lutaria.

Cistudo Europæa, DUM. et BIB. vol. ii. p. 220.

Emys lutaria, BUON. Faun. Ital. (figured).

DESCRIPTION.—Carapace wide, oval, more or less depressed; black, marked with yellow spots varying in distance from each other, but arranged like rays, extending from the centres of the plates to their circumferences; the neck-plate is small; the plastron is attached to the carapace by a cartilage, and is moveable before and behind; the tail is rather long, rounded, and ending in a point; it is always shorter and thicker at its base in the males than in the females.

Entire length, from 9 to 11 inches.

Lives in lakes and marshes, remaining generally buried in the mud; as winter approaches, it comes to land and passes that season in a state of torpor, hidden in some hole.

The female lays her eggs in a dry place, but close to the water; they are white, marbled with ash-grey. This Tortoise is widely spread over Europe, being found in Greece, Italy and its islands, the South of France, Hungary, Germany as far north as Prussia, the Crimea, and shores of the Caspian Sea. In most of these countries its flesh is eaten, though not much esteemed, by the natives.

Emys Caspica.

Emys Caspica, DUM. et BIB. vol. ii. p. 235.

Terrapene Caspica, BUON. Faun. Ital. (figured).

DESCRIPTION.—The carapace is oval and smooth in the adult, but in the young animal with three ridges; the neck-plate is short, wide, four-sided, narrower in front than behind; the sternum does not, at either end, reach to the corresponding extremity of the carapace; the limbs, especially the thighs, are granulated; the latter have also a number of sharp tubercles scattered over their surfaces, as has the basal portion of the tail above and beneath; the tail is variable in length, but generally about half as long as the sternum; its base is thick and its tip slender. The general colour of the carapace is olive; over its surface is a network of winding, confluent, yellow lines; these, although conspicuous in the living animal, become indistinct in specimens preserved in spirits; the plates of the disk are surrounded by a black border, which is wanting in the very young; the plates of the sternum are at first, and for a long period, black, with the exception of a small oblong yellow spot on their outer margin; as the animal grows older, this spot enlarges in an irregular manner.

Entire length about 15 inches.

This Tortoise is found in the neighbourhood of the Caspian Sea, where, as well as in the Morea, it is common in

shallow waters. It has been found also in Dalmatia, near Ragusa.

Emys Sigriz.

Emys Sigriz, DUM. et BIB. vol. ii. p. 240.

Terrapene Sigriz, BUON. Faun. Ital.

DESCRIPTION.—This species closely resembles the preceding. Its carapace, however, is never tri-carinated, but exhibits along its centre a single raised line, much more elevated in its hinder than in its anterior portion; this gradually disappears with advancing age: the surface, moreover, above the eyes, instead of being flat or slightly hollowed, is somewhat convex. The markings of the carapace differ considerably in the two species. In the present one, the yellow network is altogether wanting, while in the centre of each plate of the disk is an orange spot surrounded with black, and on its other parts two or three of a less regular form; the plates of the margin are also spotted with yellow, varying in extent and brightness of hue in different individuals. The head is uniform olive-green, without a trace of yellow lines. The longitudinal lines on the neck, instead of being yellow, edged with black, as in the *E. Caspica*, are orange, and without a black border. The sternum is brown, with a broad, waved, pale yellow line along the margin, extending sometimes over the centre, and following the sutures of the plates. In animals of every age, a deep black, longitudinal band is observed on each lateral prolongation of the plastron.

Its size is less than that of the foregoing species; the total length of a small specimen given in the 'Erpétologie Générale,' being 16 centimetres, about $6\frac{1}{2}$ inches.

It is found in Europe, in Spain only, but is common on the opposite coast of Africa, and has been obtained at Algiers.

Genus **CHELONIA.**

Legs adapted for swimming, forming a sort of paddle or fins; the body enclosed in a horny case; the jaws are horny, forming a beak like that of a bird of prey, hooked above and below, sometimes serrated on the edges.

Seldom leaving the sea except at the breeding-season, when the female deposits a large number of eggs in the sand above high-water mark, leaving them to be hatched by the heat of the sun. The eggs are very numerous and perfectly round, and the young are produced within about twenty days.

The food of the Turtle consists, for the most part, of marine plants, but also of Mollusca and Crustaceans. The tail is very short in all the species.

Chelonia Caouana.

Chelonia Caouana, DUM. et BIB. vol. ii. p. 552.

Chelonia caretta, BUON. Faun. Ital. (figured).

DESCRIPTION.—Carapace nearly heart-shaped, its length greater by one-third than its breadth at the middle; the plates of which it is composed are not imbricated; they are fifteen in number on the disk, and twenty-five on the margin; the neck-plate is three times longer than wide. In the adult the carapace is even, but in the young and middle-aged there is a distinct dorsal ridge. The two first toes of each claw are furnished with nails, that of the first toe being the strongest, and slightly hooked; the eyelids are covered with tubercles. The colour of the carapace is dark chestnut-brown; the limbs of the same, edged with yellow; the head is bright chestnut; all the under parts of the body are yellow of various shades.

The entire length is upwards of 4 feet.

This Turtle is not uncommon in the Mediterranean,

especially in the more eastern parts, and has been taken in the Adriatic and on the coasts of Languedoc. It inhabits the Atlantic Ocean.

Genus **SPHARGIS.**

Only the following species known. Distinguished from other Turtles by the leathery covering, which takes the place of the horny case that characterizes the latter; the claws are without nails. Food and habits but little known, probably similar to those of the preceding genus.

Sphargis coriacea.

Sphargis coriacea, DUM. et BIB. vol. ii. p. 560; BUON. Faun. Ital. (figured).

The Leathery Turtle.

DESCRIPTION.—The carapace is heart-shaped, the hinder extremity much pointed; an elevated ridge follows the dorsal line from end to end; and on either side of this central ridge are three parallel ones, equidistant from each other; between these ridges the surface is quite smooth; the sternum is also smooth; the head is without plates; the jaws are very strong; the lower jaw turns upwards at its extremity, forming a hook, which is received into a corresponding channel in the upper jaw. In the young, the lines on the carapace are formed by a succession of tubercles in rows, and the entire surface, both of it and of the plastron, is warty. The eyelids are divided almost vertically; the fore-feet or fins are as long again as the hinder, the latter, however, being the wider; there is no trace of nails to the toes; the tail is as long as the point at the hinder extremity of the carapace. The general colour is brown, with numerous pale yellow spots on the upper surface; the legs and tail are black.

The entire length sometimes exceeds 6 feet.

The Leathery Turtle is nowhere common. A few examples have occurred in the Mediterranean and in the Atlantic, on the coasts of France and England. It is supposed to be a tropical species.

Order II. SAURIA.

The skin is covered with scales or scaly granules; the body and tail are elongated; the majority have four feet, but a few have only a single pair. The jaws are always armed with teeth, and the toes with nails, with very few exceptions.

Family CHAMÆLEONIDÆ. CHAMELEONS.

The body is compressed, the entire surface chagrined with small granular scales; the tail rounded and prehensile; there are five toes on each foot, arranged in two groups, three in one, and two in another; the toes of each group are united together as far as the claws; the tongue is fleshy, cylindrical, extensile, and of great length.

Genus CHAMÆLEO.

This being the only known genus of the family, most of its characters have been already given. The head is angular, and the occiput rises in a pyramidal form; the teeth are three-lobed; each eye has the power of movement independently of the other. Chameleons are insectivorous reptiles, remarkable for their slow and awkward movements, their extraordinary form, and, above all, for the changes which occur in the colour of their skin. This

phenomenon, the cause of which has long been a subject of difference among naturalists, has nothing to do with the hue of the objects by which they are surrounded, but bears relation to the degree of light or darkness to which they are exposed, and to the state of their own feelings of fear or anger.

Chamæleo vulgaris.

Chamæleo vulgaris, DUM. et BIB. vol. iii. p. 204.

Chamæleo Africanus, GUÉRIN.

DESCRIPTION.—The occipital crest or hood is pointed, and raised into a ridge in front; there is a ridge along the back, which is toothed in its anterior portion; and beneath the body, from the chin to the tail, runs another ridge, toothed in like manner. In the female the hood is smaller, and the dentations of the ridge less strongly marked. The round or ovate granules with which the body is covered are closely pressed together when the animal is not swelled up, but when it thus extends its skin, they appear to be arranged in groups of five or six. Its colour changes from almost white to nearly black; sometimes these shades are so arranged as to give it a striped appearance; sometimes the skin is grey or yellow, with spots or marks of orange.

The female is generally rather larger than the male; a large individual of the former sex measuring about 14 inches in its entire length.

The Chameleon lives habitually in bushes or trees, grasping the branches firmly with its claws and tail. The female lays about thirty eggs in a hollow in the ground, and covers them over with loose earth.

In Europe it is found only in the South of Spain, and is common around the Bay of Cadiz. Its geographical range extends along the entire of the African shores of the

Mediterranean, but is confined to the northern portion of that continent.

Family GECKO'TIDÆ.

The body and head are flattened, especially the latter; the belly is near the ground, enlarged in the middle; the claws are short, of nearly equal length, separate, robust, generally enlarged for a greater or less extent, and with regular folds of the skin beneath, enabling them to climb walls, and even to creep along a ceiling. There are no teeth on the palate; the tongue is short, fleshy, not extensile; the tail is marked by circular folds, never very long; the skin above is chagrined with very small granular scales, with large tubercles often dispersed among them; beneath, the scales are flattened and imbricated; the eyes are very large; the eyelids very short and withdrawn entirely between the eye and the orbit, giving the animal a peculiar appearance.

Genus PLATYDACTYLUS.

The toes are widened throughout their length, and furnished beneath with transverse, imbricated scales.

Platydictylus muralis.

Platydictylus muralis, DUM. et BIB. vol. iii. p. 319.

Ascalabotes Mauritanicus, SCHINZ, Europ. Faun. vol. ii. p. 10 BUON.
Faun. Ital. (figured).

Gecko des murailles, CUVIER.

DESCRIPTION.—The toes of the fore-feet are nearly equal in length, only the third and fourth toes of all the feet

furnished with nails; the upper part of the body exhibits transverse lines of oval, keeled tubercles; the head, though depressed, is rather deep behind; the neck is distinct, its skin folded transversely. In the males there is a row of spines at the base of the tail on each side; and there are spines along the whole of its upper surface; the tail is often broken off. These reptiles vary in colouring; sometimes the upper surface is dusty ash-grey, with the under parts dirty white; sometimes very dark brown above, with greyish bands, and beneath almost clear white.

Entire length, about 6 inches.

Frequents old walls, and often comes into houses; feeds much on spiders and flies, but also on other insects.

It inhabits Spain, Italy, Greece, the South of France, especially Provence, Sicily, and the coasts of Egypt and Barbary, and is the only European species of the genus.

Genus **HEMIDACTYLUS.**

The base of the toes furnished with an oval disk formed beneath by a double row of scales, from the centre of which disk springs the second joint of the toe.

Hemidactylus verruculatus.

Hemidactylus verruculatus, DUM. et BIB. vol. iii. p. 359; BORY et
BIBRON, Expéd. en Morée.

Hemidactylus triedrus, SCHINZ, Europ. Faun. vol. ii. p. 11; BUON.
Faun. Ital. (figured).

DESCRIPTION.—The toes on each foot are furnished with nails, their extremities beyond the disk are slender, and they are free for their whole length; the digital disks are narrow; the upper surface along the back is furnished with numerous tubercles of an indistinctly triangular form; the tail is rather more than half as long as the body,

rather depressed at base, and rounded in the rest of its length; on its upper surface are rows of spiny scales. In the males, near the root of the tail beneath, are seven, eight, or ten pores, each in the centre of a lozenge-shaped scale. The upper parts of the body are generally grey, more or less clear, sometimes red-brown marbled with brown; in some individuals the colouring is very dark above. The under parts are white, or whitish; between the eye and nostril is generally a black line.

Entire length, nearly 5 inches.

Inhabits nearly all the countries on the Mediterranean, all Central and Lower Italy, Dalmatia, South of France, Sicily, and Greece; it has been received from Trebizonde and the Senegal.

Genus **PHYLLODACTYLUS.**

All the toes furnished with nails, and dilated at their extremities into a subtriangular disk, the sole of which is smooth, either flat or convex, and always with a furrow along its centre, at the bottom of which the nail appears, as it were, buried. There are no pores on the thighs; the opening of the pupil of the eye is vertical; the lower margin of the eyelid withdrawn to the orbit; the nostrils placed on each side at the extremity of the nose; the neck is scarcely to be distinguished from the body.

Phyllodactylus Europæus.

Phyllodactylus Europæus, SCHINZ, Europ. Faun. vol. ii. p. 11; BUON. Faun. Ital. (figured).

DESCRIPTION.—The head is oval, somewhat swollen behind the eyes, depressed; the eyes are large, round, very close to the cheeks, rather nearer to the ear than to the end of the nose; the neck is more distinct than is usual in this

genus; the head and body are covered with very numerous small, hexagonal tubercles, arranged without order, increasing in size from the head to the tail; the under parts of the head and body are also covered with tubercles, which are larger than those above, and imbricated; the tail is thick and broad, constricted near the root, and fusiform to its tip, which is sharp, rather flat beneath; at its junction with the body are two large reniform glands; the legs are short and strong, the fore-legs, when applied to the neck, reach to the eye, the hind-legs half-way along the belly. The upper surface of the animal is pale fleshy, clouded or spotted with darker tints; the lower parts are dull white or yellowish.

Entire length, not quite 3 inches; tail, 5 lines.

This reptile is peculiar to the Island of Sardinia, and it is remarkable that all the other species of the genus, as recorded by MM. Dumeril and Bibron in the ‘Erpétologie Générale,’ are Australian or South American, except one, which has been found at the Cape of Good Hope and in Madagascar. The *P. Europæus* was discovered by Prof. Gêné in Sardinia, where it is usually found under the bark of trees, but occasionally under stones. It has been figured and described at length by Prince Buonaparte in his ‘Fauna Italica.’

Genus **STENODACTYLUS.**

The toes rounded, without disks, ending in a sharp point, furnished beneath with small granular scales, and dentated on their edges; no femoral pores; the tail much dilated near the base in the males, very slender for the rest of its length. There are no folds of skin along the sides of the body. The following is the only species hitherto known.

Stenodactylus guttatus.

Stenodactylus guttatus, DUM. et BIB. vol. iii. p. 434 ; SCHINZ, Europ. Faun. vol. ii. p. 11.

DESCRIPTION.—The head is much flattened ; the eyes are very large, the pupil elliptic, and the eyelid withdrawn to the orbit below ; the neck is scarcely narrower than the head ; the sides of the body are swollen ; the legs slender, the thighs not being thicker than the lower parts ; the toes are rounded, ending in long pointed nails ; the fifth toe is very short, inserted on the tarsus, much behind the others ; the tail is about half the length of the body, covered above and below with small, flat, polygonal scales ; in the male, its swollen base has twelve or fifteen spiny tubercles on each side ; the upper parts are grey, sprinkled with white spots, the lower parts all white ; on the tail are several black transverse stripes ; the nostrils and edges of the eyelids are white.

Entire length, scarcely 5 inches.

This species was found in Greece by the members of the French Scientific Expedition to the Morea, MM. Bory and Bibron, near Argos and Modon, in the Morea. In the ‘Erpétologie Générale’ of MM. Dumeril and Bibron, Egypt is the only habitat recorded.

Family IGUANIDÆ.

In this family the general form, the lengthened tail, the free and unequal toes resemble the true lizards so well known in Europe, and hereafter to be described. The eyes, ears, and most of the other characters, are also similar ; but the tongue is thick, fleshy, not extensile, and instead of being terminated by two filaments, is merely notched at the extremity. The greater number of the genera have a

crest or raised line along the back. They are for the most part natives of America or Asia; twelve species are given by Dumeril and Bibron as inhabiting Africa, and one only is European.

Genus **STELLIO.**

There are no teeth on the palate; on each side of the back is a fold of skin; the femoral pores are wanting; the scales on the back are much larger than those on the flanks; the third and fourth toes of the front feet are equal; the tail is subconical, surrounded by rings of spiny scales; the head is flattened, triangular, and slightly bulged on the sides.

Stellio vulgaris.

Stellio vulgaris, DUM. et BIB. vol. iv. p. 528; SCHINZ, Europ. Faun. vol. ii. p. 30.

DESCRIPTION.—There is no crest on the back, or only feeble traces of one near the shoulders; thirty-two teeth in each jaw; the sides of the head, of the neck and body, are furnished with spiny scales; the tail, which is rather less than two-thirds of the length of the animal, is perfectly conical throughout, except at the root, where it is slightly flattened, surrounded by large scales, arranged in rings, and bearing spines; the upper parts of the body are greenish yellow, clouded with black; many individuals have a black line extending across the shoulders; all the under parts are olive; tail spotted with black.

The entire length is about 1 foot.

It feeds on insects of various kinds, and frequents stony places and old walls.

Is very common in Greece, but has not been found in any other part of Europe; is extensively distributed through the Levant, Egypt, Syria, &c.

Family LACERTINIDÆ.

The body is prolonged, with four feet, having four or five claws, all provided with nails; the tail long, conical, often twice as long as the body; the head protected by horny, many-sided plates; the belly covered with large scales; the tongue free, extensile, divided into two filaments towards the top; the eyelids are moveable.

This family is distributed over the Old and New Worlds, but only four species are given in the 'Erpétologie Générale' as belonging to Asia, and none have been found in Australia.

Genus TROPIDOSAURA.

Tongue not sheathed at base, moderately long, divided at tip, with scaly imbricated warts; palate with or without teeth; intermaxillary teeth conical, maxillary teeth slightly compressed, those in front simple, the others tricuspid; nostrils opening each in the naso-rostral plate. There is a small fold of the skin in front of each shoulder, *but no scaly collar beneath the neck, as in the genus Lacerta*, and the scales of the upper surface of the body are much larger than in that genus. Beneath each thigh is a series of pores; the toes are five in number on each foot, and are slightly compressed; the eyelids, of which the upper is scanty and the lower ample, are covered with small angular scales.

Tropidosaura Algira.

Tropidosaura Algira, DUM. et BIB. vol. v. p. 168; BUON. Faun. Ital. (figured).

Lacerta Algira, SCHINZ, Europ. Faun. vol. ii. p. 26.

DESCRIPTION.—The head pyramidal, somewhat depressed, as long again as its width behind; the naso-frenal plate

simple; the rostral-plate is five sided; the two upper sides rather large, forming an obtuse angle; the laterals short and perpendicular, the lower side much extended; the fore-legs, when placed along the neck, do not quite reach to the end of the nose; the hind-legs, laid along the sides, reach to the origin of the fore-legs; there is a single plate under the chin, and four pairs of plates under the lower jaw, increasing gradually in size from the first pair to the last; the whole of the upper surface of the body and tail is covered with angular scales, much imbricated, pointed behind, and distinctly keeled; from one side of the belly to the other, over the back, are about twenty-five longitudinal rows of scales; all the lower parts are protected by angular, smooth, flat scales, more or less rounded at their free edges; on the belly these are arranged in six longitudinal rows; the tail is one-and-a-half times longer than the rest of the body; the femoral pores are from fifteen to eighteen on each side, each surrounded by three scales, one of which is smaller than the other two; the pre-anal region is nearly covered by a large pentagonal smooth plate; the upper parts of the body are coppery, or tawny brown, with green or gold reflexions, often very brilliant in the adult; a gilded streak of whitish yellow extends on each side, from the crown of the head to the side of the tail, and another like streak from the angle of the mouth to the groin; these streaks are sometimes spotted with black; on each temple is a line of golden yellow; behind the shoulders are generally several blue and black specks; the parts beneath the body are whitish, with gold and green reflexions.

Entire length, about 10 inches.

This Lizard inhabits most of the European and African coasts of the Mediterranean, Italy, Spain, and the South of France. It is rare, however, in the Pyrenees and Provence; is found also in the Island of Sardinia.

Genus **LACERTA.**

The generic characters of these Reptiles are almost identical with those of *Tropidosaura*, the only important difference being the presence of a collar formed of large scales under the neck, and in the arrangement and shape of the plates of the belly, which in *Lacerta* are flat, smooth, quadrilateral, and disposed in the form of a quincunx. In general appearance they are the same.

The great majority of the species are European. In the 'Erpétologie Générale' they are divided into three groups, according to the form and arrangement of their scales, as follows:—

FIRST GROUP. *Dorsal scales large, rhomboid, keeled, and very distinctly tiled.*

Lacerta nigropunctata.

Lacerta nigropunctata, DUM. et BIB. vol. v. p. 190; SCHINZ, Europ. Faun. vol. ii. p. 16.

Notopholis nigropunctata, BUON. Faun. Ital. (figured).

DESCRIPTION.—On each temple is a large plate, surrounded by polygonal scales of different sizes; the large scales which form the collar are tiled from the outside to the centre; they are nine in number, slightly rounded on their free edges; the eyelids are covered with small scales; the fore-feet scarcely reach beyond the anterior edge of the orbit; the hind-legs reach a little beyond the shoulder; the dorsal scales are arranged in twelve longitudinal rows, and are distinctly keeled in an oblique direction; the scales of the flanks are very much smaller, forming seven or eight rows on each side; above the fore-leg are three or four large hexagonal scales, much dilated sideways, and obliquely tiled; the triangle of the thorax is composed of

twenty irregularly rhomboid scales ; the plates of the belly are quadrilateral, in twenty transverse, and six longitudinal rows ; the femoral pores are tubular, from fifteen to seventeen on each thigh ; caudal scales rectangular, keeled. All the upper parts of the body are olive-green irregularly spotted with black ; the under parts are white, with a tinge of blue or olive ; the soles of the feet are yellowish.

Entire length, $7\frac{1}{4}$ inches, of which the tail is $4\frac{1}{4}$ inches.

This species is peculiar to Corfu, where it has been found in a few rare instances.

Lacerta Moreotica.

Lacerta Moreotica, DUM. et BIB. vol. v. p. 192 ; SCHINZ, Europ. Faun. vol. ii. p. 16.

Notopholis Moreotica, BUON. Faun. Ital. (figured) (not described).

DESCRIPTION.—The scales of the back, upper part of the neck, and sides of the body are all nearly of the same size, rhomboid, and strongly keeled ; from the base of one side to that of the other, counting across the centre of the back, are twenty-two scales ; ventral plates in six rows, of which the two outer and the two central are narrower than the remaining two ; the triangle of the thorax contains seven or eight scales ; on each side of the hinder margin of the pre-anal plate are about twelve very small scales. There are no teeth on the palate, at least in those specimens described in the ‘Erpétologie Générale ;’ the fore-feet will reach to the anterior margin of the eye, the hind-feet not quite to the shoulders of the fore-feet ; the scales of the tail are oblong, each with a blunt point behind, formed by the prolongation of the keel. All the upper parts are of a uniform olive tint ; a yellow streak, beginning beneath the ear, passes along the sides of the neck and of the back, ending behind the thigh ; the sides of the neck and body

are black, with white spots; some black spots on the lips; all the lower parts of the body are whitish.

Entire length, $4\frac{1}{4}$ inches; tail, $2\frac{1}{4}$ inches.

Discovered in the Morea, in 1828, by the members of the French Scientific Expedition, and would seem to be peculiar to that country.

Lacerta Fitzingeri.

Lacerta Fitzingeri, DUM. et BIB. vol. v. p. 194; SCHINZ, Europ. Faun. vol. ii. p. 26.

Notopholis Fitzingeri, BUON. Faun. Ital. (figured).

DESCRIPTION.—This species, which closely resembles the preceding, is distinguished from it at once by its more slender shape; the temples above and behind are covered by plates of unequal size, in front and below they are coated with granules; the fore-feet reach to the eye; the hind-feet do not reach to the shoulders of the fore-feet by a space equal to the width of the back; the tail is much longer than the whole of the rest of the animal; it is slightly squared, and of equal thickness for half its length; it then becomes round, and diminishes gradually in size. The form and arrangement of the dorsal and lateral scales are the same as in the *L. Moreotica*, but there are only sixteen in place of twenty-two in the line drawn from side to side of the belly across the middle of the back; the ventral plates are quadrilateral, and arranged in six longitudinal lines, of which the two inner and the two outer are narrower than the remaining two; the small scales on each side of the pre-anal plate are but one or two instead of twelve, as in the above-named species. The colour is a uniform olive over the whole of the upper surface, while the under parts are white tinged with green, excepting the tail beneath, which is of the same colour as the back.

The entire length is about $4\frac{1}{2}$ inches; tail, nearly 3 inches.

It is found only in the Island of Sardinia, and is confined to certain districts in the north and centre of the country.

SECOND GROUP. *Dorsal scales more or less oblong, narrow, hexagonal, tectiform, not tiled as decidedly as in the First Group.*

Lacerta stirpium.

Lacerta stirpium, DUM. et BIB. vol. v. p. 196; SCHINZ, Europ. Faun. vol. ii. p. 17.

Lacerta agilis, BUON. Faun. Ital. (figured); BELL, Hist. Brit. Quad. (figured).

Lacerta Europæa, PALLAS, Zoog. Ross. As. vol. iii. p. 29.

Sandy Lizard, BELL.

DESCRIPTION.—Two naso-frenal plates, the upper one resting in part on the lower, and in part on the post-naso-frenal plate; the temples are clothed with small, unequal, irregularly polygonal plates, of which that in the middle is rather the largest; palatal teeth present to the number generally of seven or eight on each side; they are small, strong, simple, and conical; the collar is well-defined by nine quadrangular scales; the sides of the neck beneath are covered with granules, higher up, with round flat scales; the scales of the back are oblong, subhexagonal, tectiform, slightly keeled, arranged in transverse rows, which contain, near the neck, from three to seven, and on the centre of the back seven scales each; the scales of the upper part of the sides are more distinctly hexagonal than those last mentioned; the ventral plates are in six rows, without counting a marginal row on each side containing twenty-four to twenty-six plates, each of very small size; of the six rows,

the two central and the two outer are smaller than the remaining two; the pre-anal plate is large, four- or five-sided, and bordered by a row of from seven to nine plates, which are tiled upon the central plate; the fore-legs scarcely reach to the front of the eyes; the hind-legs, laid along the sides, do not extend much beyond half of their length; femoral pores eight to fifteen on each side, in flat triangular scales. The colour of the back is brown or brickdust, sometimes spotted with black; the sides greenish in the male, tawny brown in the female; belly white, or white spotted with black, but many variations of colour will be met with.

Entire length of a large specimen, $8\frac{3}{4}$ inches; tail, 5 inches.

The Sandy Lizard is found over nearly the whole of Europe, if we except the extreme North. It is rare in Belgium. Is found only in the Northern parts of Italy, and in certain districts of the South of England. Is not common in the Southern Provinces of France, according to Crespon, but abounds in Germany, Switzerland, Poland, Northern Russia, and in Siberia, and generally throughout Central Europe; everywhere, however, avoiding mountains, in which respect its habits are the reverse of the *L. vivipara*.

Lacerta vivipara.

Lacerta vivipara, DUM. et BIB. vol. v. p. 204.

Lacerta pyrrhogaster, SCHINZ, Europ. Faun. vol. ii. p. 19.

Zootoca vivipara, BELL, Hist. Brit. Quad.

DESCRIPTION.—Smaller than *L. stirpium*; the tail longer in proportion and of a different shape, retaining the same thickness for the first half of its length, and then diminishing gradually to its extremity; the palate is without teeth; there is only one naso-frenal plate; the temples are covered

with small polygonal or subpolygonal plates, with a large angular one in the centre; the dorsal scales are long, narrow, hexagonal, and less distinctly keeled than in the foregoing species; the head more depressed and the nose sharper; the plates of the belly are in six rows, with two small marginal rows, as in that species; the pre-anal plate is bordered by two rows of scales; the fore-legs reach to the eye, the hind-legs extend along two-thirds of the sides; femoral pores from nine to twelve on each thigh; the back is brown, olive, or reddish, with a black band on each side from the head to the tail; a second dark band runs along the side, and is edged with white. The general colour of the upper surface of the animal is that of the back; the parts beneath are spotted with black upon a whitish ground, often with a blue or green tinge.

Remarkable as being ovoviviparous, the membrane in which the young are enclosed bursting immediately upon their expulsion from the mother.

The entire length is usually from $5\frac{1}{2}$ to $6\frac{1}{2}$ inches.

This Lizard is never found in low or flat countries, but frequents mountain districts in the greater part of North and Central Europe, and is common in Switzerland, Germany, Poland, France, England, Scotland, and Ireland. In Italy it is only found in the Alpine regions of the North. Inhabits also the hilly parts of Belgium and Russia.

Lacerta viridis.

Lacerta viridis, DUM. et BIB. vol. v. p. 210; SCHINZ, Europ. Faun. vol. ii. p. 15; BUON. Faun. Ital. (figured).

DESCRIPTION.—Two small naso-frenal plates, one above the other; temples covered with polygonal plates, having that in the centre the largest; one small occipital plate, generally of a triangular form, truncated in front; the length of the head is as long again as its height, and its height is

rather less than its width; the fore-feet extend to the nostrils, the hind-feet to the commencement of the fore-feet, or to within a short distance of that point in some specimens; the tail comprises about two-thirds of the length of the body; there are about twelve small conical teeth on either side of the palate; the scales on the upper part of the neck and beginning of the back are oval and tectiform, becoming by degrees more hexagonal as they advance towards the tail; the scales on the sides are oval, with a slight longitudinal elevation along their centres, excepting in the three or four rows next to the ventral plates, which are quite flat; in a line drawn over the centre of the back from one edge of the ventral region to the other, fifty scales may be counted; these are decidedly smaller than in *L. stirpium*; the ventral plates are in eight rows, the outer ones being short and composed of small plates; of the six complete rows the two central are the narrowest; the femoral pores are from twelve to twenty in number on each thigh. The colouring of the Green Lizard is very various, the colour of the upper surface of the body being sometimes of a uniform green, sometimes green with yellow spots, or brown with green or white markings; sometimes brown, with from two to five longitudinal white streaks edged with black; the lower parts are generally yellow.

The entire length, in the greater part of the countries in which it is found, seldom exceeds 15 inches; but in the Morea individuals occur measuring 18 inches.

Frequents hedges, bushes, and grassy places, and is found in the Alps to the height of 10,000 feet above the sea.

The Green Lizard inhabits the greater part of Central and Southern Europe, including France as far North as Paris. It is very common in the South of that country, all

over Italy and the South of Switzerland. Is found in Sicily, Greece, Poland, Austria, the Crimea, and Barbary.

THIRD GROUP. *Dorsal scales distinctly granular, very close to each other.*

Lacerta ocellata.

Lacerta ocellata, DUM. et BIB. vol. ii. p. 218; BUON. Faun. Ital. (figured).

Lacerta margaritata, SCHINZ, Europ. Faun. vol. ii. p. 14.
The Great Green Lizard.

DESCRIPTION.—This species is the largest of its genus, and in its general form closely resembles the *L. viridis*; the fore-legs do not quite reach to the nostrils, and the hind-legs almost always extend to the shoulders; the head is one-fourth of the length, measured from the tip of the nose to the root of the tail; the tail is more than two-thirds of the entire length of the animal; the lower eyelid is scaly; on each side of the palate are twelve small conical teeth. There are two naso-frenal plates, one over the other; the occipital plate is triangular, as broad, or broader than the frontal plate; the temples are paved with small, nearly equal, polygonal plates, the central one very rarely a little larger than the others, thus differing from the three preceding species. The scales on the upper parts of the body are smaller than in the *L. viridis*; those on the neck are round, on the back slightly oval, and somewhat tectiform. A line drawn across the back, from one margin of the belly to the other, contains sixty-six scales; the collar is composed of eleven scales; the ventral plates are in ten rows, the two outer very small, with about twenty plates in each, the other rows with twenty-five or twenty-six plates in each; the pre-anal plate is large, with a double or triple border of angular plates in front; femoral pores

from twelve to eighteen on each side ; the scales of the tail are long, narrow, keeled, and arranged in rings. The colouring varies much with the age of the animal. In the young all the under parts of the body and limbs are whitish green, the upper parts pure green, with twelve or thirteen irregularly transverse black bands, upon which are placed four or five round yellow spots ; on the upper eyelid is a large black spot ; on the flanks are also black bands with blue spots. As the animal grows older the yellow spots become green, and the blue of a deeper shade. In the adult the spots can hardly be distinguished from the green of the back, but the blue spots on the flanks are more distinct than in the young ; the back has become a network of black and green zigzag lines ; the under parts of the body are often bluish green.

Entire length, $17\frac{1}{2}$ inches ; tail, $10\frac{1}{2}$ inches.

This Lizard is very common in Spain and the South of France. In Italy, Prince Buonaparte limits its range to "the Eastern Riviera of Liguria." It has been also found in Algeria.

Lacerta Taurica.

Lacerta Taurica, DUM. et BIB. vol. v. p. 225 ; PALLAS, Zoog. Ross. As.

Lacerta Peloponesiaca, BIBRON et BORY, Expéd. Scien. Morée.

Podarcis Taurica, BUON. Faun. Ital. (figured).

DESCRIPTION.—In general form less slender than the *L. muralis*, but more so than the *L. stirpium*. The length of the head measures one-fourth of the distance from the tip of the nose to the root of the tail ; the fore-legs reach to the anterior border of the eye ; the hind-legs do not extend to the shoulders ; on the palate are several small teeth ; the occipital plate is less by one-half than the frontal plate ; there is only one naso-frenal plate ; the temples are clothed with small hexagonal, or subhex-

agonal plates, with a central one rather larger than the rest; on the neck is a well-defined furrow; the collar is composed of from nine to twelve plates; the neck above, and on its sides and the back, are furnished with small round, convex scales, closely pressed to each other; those on the sides of the body are four-sided, with the angles rounded; a line drawn across the back, from edge to edge of the belly, contains from fifty-six to sixty scales; the ventral plates are in eight rows, the two outer being shorter than the others; pores from fourteen to twenty on each thigh; the caudal scales are long, narrow, and keeled; the tail is as long again as the rest of the body. The upper parts of the body are olive, parts beneath whitish, with a blue or green tinge; the inside of the limbs and the under part of the tail are reddish. In the male, on the sides of the neck and body are confluent black zigzag spots. In the females are two whitish or yellowish streaks on each side of the back, with a number of black specks between them; the lower eyelid is scaly.

Entire length, $8\frac{1}{2}$ inches; tail, $5\frac{1}{2}$ inches.

Very common in the South of the Crimea, according to Pallas, and in the Morea. Has been received from Corfu, and the authors of the 'Erpétologie Générale' found it in Sicily, where its habits appeared to resemble those of the *L. muralis*.

***Lacerta muralis*.**

Lacerta muralis, DUM. et BIB. vol. v. p. 228; SCHINZ, Europ. Faun. vol. ii. p. 20.

Podarcis muralis, BUON. Faun. Ital. (figured).

DESCRIPTION.—Only one naso-frenal plate; the occipital plate very small; the length of the head is contained four times in the space between the tip of the nose and the root of the tail; the palate generally is without teeth, but they

are present in rare instances. In the centre of the temporal region is a large circular plate, along the upper margin of which are four or five small obscurely four-sided plates; the rest of the temple with granular, oval, or subhexagonal plates; the length of the legs in proportion to that of the head or body varies in different individuals; the tail is as long again as the rest of the animal; the lower eyelid is scaly; the collar is composed of from nine to eleven plates, the edges of which are straight, and not notched as in *L. stirpium*, *viridis*, and *ocellata*; the neck and back are covered with granular, convex, round scales; those on the sides are similar, but perhaps rather less convex; a line drawn across the back, from edge to edge of the belly, contains sixty scales; the ventral plates are in six rows; pores from fifteen to twenty on each thigh; the scales of the tail are long, narrow, and with a small blunt point behind. The colouring of this Lizard is so variable, that it has been found necessary by the authors of the 'Erpétologie Générale' to make the following divisions:—

Var. 1.—The upper parts olive-grey, sometimes waved with a lighter tint, a streak of which latter colour runs from the head to the thigh on each side; the upper part of the sides is marked with whitish spots on a brown ground; parts beneath yellowish white. Found in Sicily.

Var. 2.—Head above olive; back greyish green, sometimes gilt, with a white streak on each side between two rows of black spots; sides gilt, or with a copper tinge, sometimes with a white line with black points on each side of it; the upper parts of legs and tail the same colour as the back, or nearly so; all the under parts either white or tinged with reddish. Found in the kingdom of Naples, Dalmatia, and Teneriffe.

Var. 3.—The upper part of the head irregularly spotted with black on a tawny olive ground; back grey or reddish

brown, with a black streak on each side from the eye to the tail; on this band are seen two white streaks in the same direction; the legs are dotted with white spots on a ground of the colour of the back; all the parts beneath pure white. Found in France, Italy, and Corsica.

Var. 4.—Differs from the last in having on the back, close to each other, black spots in transverse waved lines; the black bands on the sides are sometimes notched at their edges, and the sides of the body are occasionally marked with blue. Found in France, Spain, and at Trebizond.

Var. 5.—All the upper parts, except the tail, dotted with black on a tawny grey ground; from behind the eye to the thigh is a pale brown band; the under parts are whitish yellow. Found in Spain.

Var. 6.—On a grey, olive, or greenish ground, are three rows of irregular blackish spots, one along the line of the back, and one on each side of it; each of these spots is surrounded with whitish. Found in France, Italy, and Corsica.

Var. 7.—Top and sides of the head, neck, back, and legs a fine green; on the flanks a number of irregular black or brown spots; tail olive, lower parts white, tinged sometimes with green. Found in Sicily and near Rome.

Var. 8.—Upper parts grey, with a brown or black band, like a chain, from head to tail; the sides of the neck and body marbled with black; parts beneath white. Inhabits Italy and Sicily.

Var. 9.—All the upper parts marbled with black, on a grey, olive, or greenish ground; parts beneath white. Found in Naples, Sicily, and Corsica.

Var. 10.—All the upper parts deep marbled black; parts beneath white, but much spotted with black, sometimes nearly all black. Found near Rome, Naples, and in Sicily.

Entire length, 9 inches; tail, 6 inches.

This Lizard, according to the 'Erpétologie Générale,' is spread over nearly all Europe and the Western regions of Asia. All over Italy, Sicily, and the South of France, as well as most other parts of that country. Common in Switzerland and Belgium, where it is more numerous than any other species. In the Faunas, however, of Silesia, Carniola, Gallicia, and the Bukovina, there is no mention made of it.

Lacerta oxycephala.

Lacerta oxycephala, DUM. et BIB. vol. v. p. 235; SCHINZ, Europ. Faun. vol. ii. p. 17.

Podarcis oxycephala, BUON. Faun. Ital. (figured).

DESCRIPTION.—This Lizard, which is closely allied to the preceding species, differs from it by the greater depression of the head, the greater length and sharpness of the snout, and by the distinctly smaller size of the scales of its collar; the plates below the eyes also, which in the *L. muralis* are sharply angular in front, are here of a regularly oval form. In this species the central plate of the temple is very small, scarcely as large again as the others of that region, which are convex and nearly round; the nasofrenal plate is sometimes divided lengthwise; the occipital is narrower than the frontal; the palate is without teeth; the dorsal scales are oval and slightly convex; ventral plates in six rows; the upper parts are tinged with red-brown, olive-green, or blue; a kind of brown network with rounded interstices covers the neck, back, and flanks; the top of the head, sides of the belly, chest, and legs are sometimes speckled with black; all the lower parts of the body are greenish white. In the young animal the network of the back is indistinct.

Entire length, nearly 8 inches; tail, $4\frac{1}{2}$ inches.

This Lizard has been obtained in Dalmatia and Corsica, where it is found among rocks on the mountains, never in the plains. Prince Buonaparte is of opinion that the *Podarcis hieroglyphica* of Constantinople is identical with this species.

Genus **PSAMMODROMUS.**

The tongue and teeth are as in the genus *Lacerta*, as is the disposition of the plates of the head. There is scarcely a trace of a collar, merely a very slight fold of the skin being visible, with the scales upon it of the same size as those adjoining. In front of each shoulder is a slight curved fold; ventral plates four-sided, and so arranged as to form both transverse and longitudinal rows; the toes are keeled above, not toothed on their edges.

Psammodromus Edwardsii.

Psammodromus Edwardsii, DUM. et BIB. vol. v. p. 253.

Psammodromus Edwardsianus, BUON. Faun. Ital. (figured).

Lacerta Edwardsiana, SCHINZ, Europ. Faun. vol. ii. p. 27.

DESCRIPTION.—The legs are slender; the belly rather swollen; the fore-legs will reach to the nostrils, the hind-legs to the shoulders, or a little further; the tail is two-thirds of the entire length of the animal; the granular plates over the eye are in general very small; there is only one naso-frenal plate, of a subtriangular shape; the temples are covered with hexagonal scales of nearly equal size, those near the upper edge being keeled; the eyelids are clothed with very small granular scales; the scales of the throat, and neck beneath, are much tiled, flat, smooth, subhexagonal, not separated from the scales of the chest by a space covered with minute plates, as in the

genus *Lacerta* ; on the back, and all the upper parts of the body and flanks, the scales are very large, rhomboid, keeled, and tiled ; the scales of the tail are also keeled and tiled, and are disposed in rings ; ventral plates in eight rows, rhomboid, except in the two central rows, which are narrower than the others ; they form from twenty-eight to thirty transverse rows ; the pre-anal plate is lozenge-shaped, with a small scale on either side ; on each thigh are from twelve to fifteen tubular pores ; the lower parts of the body are whitish, with changeable reflexions ; the upper parts bluish or reddish grey ; the head, as it were, powdered with dark brown, especially near the margins of the plates ; the upper eyelids black ; along each side of the back are three parallel streaks of a yellowish hue, interrupted at intervals by spots of white or yellow ; on either side of these spots is a large black or brown dot ; the tail is grey ; on the upper part of the legs are round, whitish spots edged with brown, forming on each thigh two or three transverse rows. In some light-coloured specimens there is on each temple a white spot, and a bright bluish-green spot over the shoulder. The young are generally tinged with blue ; when the animal is old, it becomes reddish, with the scales larger and rougher. Two varieties may be distinguished, according to the predominance of the pale streaks before named, or of the spots by which they are interrupted.

Entire length, about 6 inches ; tail, 4 inches.

Very abundant in Spain ; not uncommon in the South of France ; rare near Nismes, but common at Aigues-mortes and Montpellier, both in hilly places and near the stagnant waters along the coast. In Italy, Prince Buonaparte restricts it to the western frontier.

Psammodromus cinereus.

Psammodromus cinereus, BUON. Faun. Ital. (figured).

Lacerta cinerea, SCHINZ, Europ. Faun. vol. ii. p. 28.

DESCRIPTION.—This is distinguished from the last, by Prince Buonaparte, by the head being smaller, the feet and tail shorter, the scales of the temples larger and more unequal, the parietal plates smaller, and the gular furrow deeper and uninterrupted, covered with scales somewhat larger than the rest, so as almost to give an appearance of a collar; the fore-feet also hardly reach beyond the eyes; the femoral pores are scarcely visible.

The colour, instead of being varied, as in the *P. Edwardsianus*, is of a uniform ashy hue. Its habits and proportions are the same as in the allied species, and they are found together on both sides of the Var, on the frontier of France and Piedmont, and near Marseilles.

Not mentioned in the ‘Erpétologie Générale.’

Genus ACANTHODACTYLUS.

No teeth on the palate; a single naso-rostral plate, between which and the first labial, and naso-frenal plates, the nostrils are situated. Beneath the neck is a collar of scales larger than the rest; there is no occipital plate; the temples are clothed with small equal scales; the ventral plates are smooth, quadrilateral, arranged in rows, sometimes rectilinear, often oblique, smaller, and more numerous than in the genus *Lacerta*; pores along the thighs; feet with five toes slightly compressed, keeled beneath, and toothed on the side; tongue and teeth as in *Psammodromus*.

Acanthodactylus vulgaris.

Acanthodactylus vulgaris, DUM. et BIB. vol. v. p. 268.

Acanthodactylus boskianus, BUON. Faun. Ital. (figured).

Lacerta velox, SCHINZ, Europ. Faun. vol. ii. p. 23.

DESCRIPTION.—The two palpebral plates form a suboval disk furnished with granular plates on the outside, behind, and in front; naso-frenal, and first upper labial, flat; the lower margin of the subocular plate forming a very open angle, locked between the two last upper labials; lower eyelid scaly, granular. The collar consists of from nine to eleven scales, of which that in the middle is more dilated than the rest; the scales in the first row on the breast are oblong, quadrilateral, the others lozenge-shaped; ventral plates in ten rows, those of the two outer on each side very small, and distinctly rhomboid, in the other rows large, wide, and less distinctly rhomboid; the toes are but slightly toothed on their sides, but their plates beneath are strongly and doubly keeled; the scales of the back are small, equal, angular; the plate under the chin is much developed, and is followed by five pairs of plates, which are parallel up to the third pair, and afterwards divergent in the shape of a V; the upper part of the temple is clothed with very fine circular granules; the anterior margin of the ear is granulated; the upper part of the head and of the tail is a more or less bright brown, all the other upper parts of the body being either black or very dark brown; the paws are spotted with white; along each side of the neck, and along the flanks are four white streaks, one of which is interrupted by the shoulder; another streak of the same colour runs along the middle of the neck; all the lower parts white, but the tail and hinder part of the thighs are often tinged with rose-red: sometimes the white streaks are much interrupted, so as to

become rather rows of white spots, between which rows are lines of smaller black and white spots.

Entire length, $11\frac{1}{2}$ inches ; tail, $6\frac{1}{2}$ inches.

Found in Spain and the South of France, where, in the Gard and Herault, Crespon regards it as of rare occurrence. In Italy, Prince Buonaparte says it is confined to the French frontier near the Var.

Acanthodactylus Savignyi.

Acanthodactylus Savignyi, DUM. et BIB. vol. v. p. 273 ; BUON. Faun. Ital.

Lacerta Savignii, SCHINZ, Europ. Faun. vol. ii. p. 23.

DESCRIPTION.—No occipital plate, but sometimes in its place there is a small granular scale ; the two palpebral plates form a subcircular disk, with granules on its outer, hinder, and anterior margins ; the subocular plate descends in a very open angle between the two last labial plates ; the lower eyelid is scaly ; the front margin of the ear slightly toothed ; the collar is composed of from eleven to thirteen almost equal scales, differing from *A. vulgaris* in having its central scales of the same shape and size as those of the breast, which last encroach somewhat on the ventral plates, so that they begin further back than in the last species, and are rhomboid, in twelve or fourteen rows, the two outer on each side being much shorter than the others ; the scales of the back are equal, rhomboid, slightly swollen lengthwise ; femoral pores from twenty to twenty-two on each side ; the plates under the toes are very strongly keeled, and the toes are toothed as in the other species ; the fore-paws will not reach to the nostrils, the hind-paws extend to just beyond the shoulder ; the neck above, back, and outside of legs, are covered with a sort of network, with circular intervals, and of a brown colour upon a ground of whitish, greenish, or grey ; the

skull is tawny, waved with brown; the whole of the tail is greenish grey; sometimes there is a broad band along the side, of a tawny or dull white colour; all the lower parts are white; some individuals have six whitish lines running along the back and sides longitudinally, and the tail is speckled with black; others are spotted all over with black, and have a dull white band on each side of the body, from the ear to the groin.

Entire length, about 7 inches.

Inhabits the Crimea, Egypt, and Barbary.

Genus **EREMIAS**.

The tongue and teeth as in the genus *Lacerta*. The muzzle is swollen on each side in a conspicuous manner into an excrescence, on the top of which is placed the nostril; the swollen portion is confined to the naso-rostral and the two naso-frenal plates. A scaly collar under the throat; ventral plates quadrilateral, smooth, in straight or slightly oblique longitudinal rows; pores on the thighs; toes, five on each foot, unequal, slightly compressed, keeled beneath, but not toothed on the sides; the tail somewhat squared at its base, the rest of it round; the two palpebral plates on each side form, as in *Acanthodactylus*, a disk surrounded wholly or in part by granules; the temples are always covered with very small scales, generally granular.

Eremias variabilis.

Eremias variabilis, DUM. et BIB. vol. v. p. 293.

Lacerta variabilis, PALLAS, Zoog. Ross. As. vol. iii. p. 31.

DESCRIPTION.—No occipital plate; palatal teeth eight, or sometimes only six, in number; disk over the eye nearly round, composed of two equal plates, and with a large triangular space in front covered with granules; front margin

of the ear edged with granules, which give it the appearance of being toothed; collar transverse, straight, quite free, with from nine to fifteen almost square scales; ventral plates nearly equal, not much larger than those of the breast, squared, from fourteen to sixteen in number on each side of the central line of the belly, and forming twenty-five or twenty-six transverse rows; about fifty small scales on the pre-anal region, among them, one close to the vent larger than the rest; from eight to ten femoral pores; tail short, very large at its base, becoming suddenly smaller, and ending in a very sharp point. All the upper parts of the body ashy or olive-grey, sometimes slaty; neck, back, and tail irregularly spotted with black ocelli, with a central white spot; lower region whitish or yellowish: sometimes the ocelli are united by transverse bands, with occasionally white spots.

Entire length, 7 inches; tail, $3\frac{1}{2}$ inches.

This species is thicker in its proportions, and more compact, than any other of the genus.

Inhabits the Crimea, and, according to Pallas, the Deserts of Tartary, from the Caspian Sea to the Oby.

Eremias cæruleo-ocellata.

Eremias cæruleo-ocellata, DUM. et BIB. vol. v. p. 295.

Lacerta velox, EVERSMAAN, NOUV. MÉM. SOC. IMP. NAT. MOSC. tom. iii. p. 353. tab. 30. fig. 3.

Lacerta velox, var. β , PALLAS, ZOOG. ROSS. AS. vol. iii. p. 31.

DESCRIPTION.—This species differs from the preceding as follows:—the head is more elongated; the tail is much longer, and not nearly so thick at its root; the interparietal plate of the head more developed; the femoral pores more numerous (being from thirteen to fifteen in number), and not so far apart; no teeth on the palate; caudal scales keeled, and the scales inside the legs hexagonal

and very broad. The upper parts are tawny brown, with small black spots on the neck and back, and along each flank a range of blue spots encircled with black; the upper surface of the hind-paws are reticulated with blackish brown; the lower regions are white.

It is by no means certain that this is the *Lacerta velox* of Pallas as above quoted, but M. Eversmann is of opinion that they are identical.

It inhabits the Crimea.

Family CHALCIDES.

Body generally cylindrical, much prolonged, or serpent-shaped; feet either slightly developed or entirely absent; trunk almost always undivided from the head and tail, bearing traces of circular rings, and in most cases with a longitudinal furrow or fold of skin between the belly and the flanks; head covered with many-sided plates or shields; teeth not inserted in the jaw-bone, but, as it were, applied to its inner margin; tongue free, scarcely extensile, wide, furnished with tubercles, notched at its tip, and not sheathed.

Genus PSEUDOPUS.

Tongue arrow-shaped, with granular tubercles on the first third of its surface, while those on the other portions are filiform; teeth on the palate; intermaxillary teeth conical and simple; maxillary teeth subcylindrical or tubercular; nostrils lateral, each opening in a single plate; the opening of the ear very small; eyelids present; plates of the head numerous; body shaped like that of a serpent; no front feet; hinder limbs represented by a small, scaly appendage, either simple or slightly bifid, on each side of

the vent, not pierced with pores ; two deep furrows along the sides ; no trace of fold or collar under the neck. The following is the only known species.

Pseudopus Pallasii.

Pseudopus Pallasii, DUM. et BIB. vol. v. p. 417.

Pseudopus serpentinus, SCHINZ, Europ. Faun. vol. ii. p. 35 ; BUON. Faun. Ital. (figured).

Lacerta apoda, PALLAS, Zoog. Ross. As. vol. iii. p. 33.

DESCRIPTION.—The principal characters have already been given in describing the genus. The head is contained seven times in the length of the trunk ; the scales of the temples are imbricated, and differ but little from those of the neck ; the ear-opening is small and oval, placed directly behind the angle of the gape ; the scales on the sides of the neck are small, smooth, rounded behind, and much imbricated ; the lateral furrows are deep, clothed with small lozenge-shaped scales. Across the body, from the head to the origin of the tail, are 100 bands of scales, forming sixteen longitudinal rows, the two outer of which on each side are concealed by the lateral fold ; beneath the body, from the throat to the vent, are 115 transverse rows, forming ten longitudinal rows of scales ; round the tail are 240 rings of scales ; all the scales of the upper parts become bony with age ; their shape on the neck, back, and sides is subrhomboid, beneath it is hexagonal ; they are wider than long, and slightly notched on their hinder edges ; the scales of the tail are keeled at every age, as are those of the whole body (except the throat) in the young. In the adult animal, the head and fore-part of the neck is greenish ash ; the upper surface of the body in general is reddish chestnut, each scale being dotted with black, parts beneath yellowish brown.

The colouring of the young is very different, being

greyish brown above and greyish white beneath; on the back are transverse brown spots, and brown streaks on the head and neck.

Entire length, about 3 feet 4 inches, the tail occupying much more than half; the rudimentary hind-legs are scarcely long enough to touch the ground.

The *Pseudopus Pallasii* inhabits Dalmatia, Istria, the Morea, North of Africa, and Southern Silesia. Pallas states that it is not uncommon in the Crimea and Caucasus, in gardens and grassy valleys.

Genus AMPHISBÆNA.

Teeth conical, somewhat curved, simple, pointed, unequal, distinctly separated, and applied to the inner margin of the jaw; the intermaxillary teeth always of an uneven number, with the central tooth from one to three times as large as the others; nostrils small, lateral, each in a single plate; fore- and hind-legs entirely wanting; pores situated in front of the vent.

Amphisbæna cinerea.

Amphisbæna cinerea, DUM. et BIB. vol. v. p. 500; SCHINZ, Europ. Faun. vol. ii. p. 36.

DESCRIPTION.—The head is depressed, the muzzle short and rounded, the eyes distinct; there are seven intermaxillary teeth and fourteen mandibulars; the rostral plate is quadrilateral, contracted in its upper portion, where it is united to the frontal plate, this last occupying the whole anterior surface of the head; there are two naso-rostral plates, of medium size, quadrilateral, not soldered together, descending to the edge of the upper lip, on which there are only two labial plates; the hinder portion of the head, and the temples are divided into small square

compartments; the tail is conical, and forms more than one-tenth of the entire length of the animal; before the vent are six small pores, each in a small scale; the compartments into which the skin is divided are square on the neck above, four-sided and very narrow on the back, flanks, and tail; on the under surface they are scarcely longer than wide; round the body, from the head to the vent, are 125 rings, round the tail eighteen; the head is dull white; the compartments of the skin above are bluish ash or brown, with more or less of a chestnut or reddish tinge, with whitish intervals; the sutures or furrows which run along the back and each side of the body are also whitish, and are marked by a succession of impressions like the letter X.

Entire length, 10 inches.

Inhabits Portugal, and has been found in Spain, near Cadiz; occurs also in Barbary.

Family SCINCOIDÆ.

Head above covered by horny, thin, angular plates, with distinct, regular sutures; neck of the same thickness with the breast; the rest of the body and the limbs everywhere clothed with imbricated scales, generally with their free margins slightly rounded, arranged in the form of a quincunx; back rounded, without crests or spines; belly cylindrical; no furrow along the sides; tongue free, not sheathed, slightly notched at its tip, covered with papilli wholly or in part.

Genus SCINCUS.

Tongue notched, scaly; teeth conical, simple, blunt; palate with a longitudinal furrow, furnished with teeth;

nose wedge-shaped, truncated; four paws, each with five toes, of nearly equal length, flattened and serrated on their edges; the sides of the body angular below; tail conical, pointed; eyelids moveable. Only one species known.

Scincus officinalis.

Scincus officinalis, DUM. et BIB. vol. v. p. 564; SCHINZ, Europ. Faun. vol. ii. p. 31.

DESCRIPTION.—Nostrils small, distinctly lateral; the head contracted towards the muzzle, the edges of which are sharp, with the angle rounded; there is no occipital plate; the total size is about that of the Common Green Lizard, but the body is much thicker and fusiform; the limbs short and stout; the tail short, being scarcely longer than the body, very thick at its origin, small, pointed, and slightly compressed towards the tip; the ear-openings are oblique, small, placed near the corners of the mouth, notched or toothed on their anterior border; upper eyelid very short, lower much developed, with a row of three or four scales, beneath which is an irregular pavement of very minute scales; the fore-paws reach as far as the anterior angle of the eye. The upper surface of the body and tail is tawny, yellowish, or brown, sometimes silvery grey; there are often five or six broad white bands across the back; the lower parts of the body and tail are always silvery white, more or less pure.

This reptile has long been considered by the natives of the countries where it is found, as well as in other parts of Europe, to have valuable medicinal qualities, principally efficacious in restoring to the body its lost vigour.

Entire length, 11 inches.

The authors of the ‘Erpétologie Générale’ do not record any European habitat; Schinz, however, says that it has been found in Greece, where he thinks it may have been

introduced. M. de Quatrefages, in his 'Souvenirs d'un Naturaliste,' narrates that he found specimens of a *Scincus* in Sicily, near Segeste. It is common in Egypt, Abyssinia, and Northern Africa generally, and has been brought from Senegal. It is not uncommon in Syria.

Genus **GONGYLUS.**

Nostrils placed partly in the nasal plate, partly in the rostral; palate without teeth; tongue notched, scaly; teeth conical, simple; four feet, each with five toes, all provided with nails of unequal length, and without teeth on their margins; flanks rounded; tail conical, or somewhat flattened laterally, pointed.

Gongylus ocellatus.

Gongylus ocellatus, DUM. et BIB. vol. v. p. 616; BUON. Faun. Ital. (figured).

Scincus ocellatus, SCHINZ, Europ. Faun. vol. ii. p. 31.

DESCRIPTION.—The general appearance of this species is massive and compressed; the fore-paws, when placed along the neck, do not reach beyond the angle of the mouth; there is a slight longitudinal depression behind the fore-legs, which receives those members when the animal is in repose; the length of the hind-legs equals that of the space between the shoulder and the eye; the tail is not as long as the body; the nose is blunt and rounded, reaching a little beyond the lower jaw; the nostrils are round, directed slightly backwards; the eyes are small, the upper eyelid very short, the lower much developed; the ear-openings are triangular, their edges smooth, and are placed near the angle of the mouth, which extends to behind the ears; the teeth are small, uniform, close to each other, from twenty-two to twenty-six in number above and below; the temple is covered by three

large lozenge-shaped scales, two of which are side by side, with the third above them ; the scales of the back and of the upper parts in general are of middle size, equal, hexagonal, much enlarged, generally smooth, but sometimes slightly striated longitudinally ; the scales on the parts beneath are larger, flatter, and smoother ; round the entire body are thirty rows of scales ; on the toes are a number of small imbricated scales, and on the soles of the feet several sharp conical tubercles. The upper parts of the body are brown or tawny, with a bronzed appearance, having a number of black spots, more or less united to each other, and with a white speck in their centres ; these vary much in number and arrangement, as well as in the proportions which the white and black bear to each other ; the spots are generally less numerous on the tail and legs than on the other parts ; the lower parts are in general yellowish white, but in some varieties they are deep black.

Entire length, about $10\frac{1}{4}$ inches.

Lives among stones and sand, in dry places. This species is spread over many parts of the shores of the Mediterranean, but especially Sicily, Sardinia, Malta, and Cyprus. Buonaparte says that it does not occur in Continental Italy. It is said, but not positively, to inhabit the South of France. Is found in Egypt and Barbary.

Genus **SEPS.**

Nostrils lateral, opening between the nasal and rostral plates ; tongue flat, scaly, arrow-shaped, notched at tip ; teeth conical, simple ; palate without teeth, deeply grooved for half its length ; four legs, each with three unequal toes, having nails, and not dentated at their edges ; flanks rounded ; tail conical and pointed ; scales smooth. Only one species known.

Seps chalcides.

Seps chalcides, DUM. et BIB. vol. v. p. 768; BUON. Faun. Ital. (figured); SCHINZ, Europ. Faun. vol. ii. p. 33.

DESCRIPTION.—The shape of the animal, excluding the short legs, closely resembles that of the *Anguis fragilis*. The fore-legs are scarcely so long as the muzzle; the hind-legs are about as long as the portion of the head behind the ears; on the fore-feet, the middle toe is the longest, then the inner, the shortest being the outer toe; on the hind-feet the first toe is the shortest, the other two being equal; the scales of the body are for the most part hexagonal, a little widened and rounded at their free edges, forming twenty-four longitudinal rows on the body, and fourteen on the tail. The upper parts of the body are coppery, or bronzed grey; along each side of the back are two streaks, sometimes white with black spots, sometimes black; some specimens exhibit sixteen or eighteen streaks on the back, alternately black and dull white; others appear all over the upper surface of a uniform olive-brown, the streaks being very indistinctly marked; the lower parts are always grey or dull white.

Entire length, about 16 inches.

Brings forth its young alive, and feeds on insects.

Inhabits the South of France, where it is not rare. Buonaparte records it as very common all over Italy. Is found in Spain, in all the Islands of the Mediterranean Sea, and on the coast of Barbary.

Genus ANGUIS.

Nostrils lateral, each opening in a single plate, the nasal; tongue arrow-shaped, divided at its tip into two points, its surface in part granular, the rest velvety; no palatal teeth; palate with a wide longitudinal groove; teeth long, sharp,

inclining backwards ; ear-openings very small ; no legs ; body like that of a snake ; scales smooth. Contains only one known species.

Anguis fragilis.

Anguis fragilis, DUM. et BIB. vol. v. p. 792 ; SCHINZ, Europ. Faun. vol. ii. p. 34 ; BUON. Faun. Ital. (figured) ; BELL, Brit. Reptiles.

The Blind-worm, or Slow-worm.

DESCRIPTION.—This animal possesses the outward appearance of a true snake ; it must, however, notwithstanding, be classed with Saurian Reptiles in consequence of the structure of the head, the consolidation of the bones of the cranium and jaws, and the narrow and confined gape. The body is cylindrical, decreasing very slowly in diameter towards the tail, which last ends rather abruptly and bluntly, and, when perfect, equals the body in length ; the plates of the head are more numerous than in other Scincoid Reptiles ; the lower eyelid is scaly and imbricated ; the body is covered with small, nearly equal, rounded scales, not keeled. The general colour is brownish grey above, with a silvery glance ; there are generally several parallel longitudinal rows of little dark spots along the sides, and one along the middle of the back ; sometimes the spots and lines are wholly wanting ; the lower parts are bluish black, with whitish network.

The young are very light yellowish grey above, the sides and belly quite black ; they are born alive, generally from seven to twelve at a birth.

The Blind-worm casts its skin like the Serpent tribe.

The entire length is from 10 to 14 inches.

It inhabits the whole of Europe, excepting the most northern regions ; it is, however, unknown in Ireland, although common in England and Scotland. Schinz states that it is not found at a high elevation on the Alps.

Genus **OPHIOMORUS**.

Closely resembling the genus *Anguis*, but distinguished from it by several points of difference. The nostrils are lateral, opening between two plates, the nasal and upper nasal; tongue flat, arrow-shaped, scaly, not velvety, feebly notched at tip; teeth conical, blunt, upright; no teeth on the palate, which has a longitudinal groove; ear-openings very small; no legs; tail long, rounded and pointed; scales smooth. Only one species known.

Ophiomorus miliaris.

Ophiomorus miliaris, DUM. et BIB. vol. v. p. 799.

Anguis miliaris, PALLAS, Zoog. Ross. As. vol. iii. p. 54.

Anguis punctatissimus, BIB. et BORY, Expéd. Scien. Morée; Hist. Nat. Rep. p. 71. plate 11. fig. 5.

DESCRIPTION.—The head is conical; muzzle narrow, rounded at the end, a little longer than the lower jaw; the ear-opening is placed beneath the fourth or fifth scale of the row which follows the upper labial plates; the lower eyelid is transparent; the rostral plate large and triangular; all the scales are nearly equal in shape and size; they are hexagonal, but little enlarged, and arched behind, forming eighteen longitudinal rows round the body. The upper parts are tawny, the flanks grey, and the parts beneath dull white; along each longitudinal row of scales, all round the body, is a series of very small black specks.

Entire length, 6 inches; tail, $3\frac{1}{2}$ inches.

Found in the Morea and in Southern Russia, and also in Algeria.

Genus **ABLEPHARUS**.

Only a rudiment of eyelid; nostrils lateral, each opening in a single plate, the nasal; tongue flat, arrow-shaped, scaly, notched at its tip; teeth simple, conical; no teeth on

the palate, and its groove is triangular and not deep ; four feet, each with five unequal toes, which are provided with nails ; scales smooth ; no femoral or pre-anal pores.

Ablepharus Kitaibelii.

Ablepharus Kitaibelii, DUM. et BIB. vol. v. p. 809.

Ablepharus Pannonicus, SCHINZ, Europ. Faun. vol. ii. p. 32.

DESCRIPTION.—The body is more snake-like, and the legs shorter than in the other species ; the fore-legs are scarcely longer than the neck, and the hind-legs are as long as the neck and head ; the toes of the fore-feet increase in length from the first to the third ; the fourth is shorter than the third, and the fifth a little shorter than the second ; on the hind-legs the length of the toes increases from the first to the fourth, while the fifth is shorter than the second ; the tail, which tapers very gradually, is not more than half the entire length of the animal ; the head is short and blunt ; the only vestige of an eyelid is found towards the hinder part of the eye, it is covered with a double row of small scales ; the head has two fronto-parietal plates ; ear-openings very small, placed among four plates just behind and a little above the gape ; there are two very large pre-anal scales ; the scales of the body are quite smooth, hexagonal, much widened, arranged in twenty longitudinal rows. The upper parts of the body are coppery green ; a band of chestnut runs along each side from the nostril to behind the thigh, and is bordered above and below by a very narrow line of white ; lower parts yellowish white. Feeds on small insects.

Entire length, about 4 inches.

Has been found in Hungary, and by the French Scientific Expedition in the Morea, in both which countries it would seem to be very rare. M. Eversmann observed it in Bokhara ; and the authors of the ‘Erpétologie Générale’

state that specimens have been received in Paris from New Holland: this, however, requires confirmation.

Order III. OPHIDIA.

The body is very long and flexible, without legs; mouth dilatable; all the facial bones moveable, except in the Typhlopidae; no external ears; eyes not provided with lids; skin covered with scales, which are generally larger on the belly, serving as a means of progression; over all is spread an epidermis, which is changed periodically.

Family TYPHLOPIDÆ.

Serpents with worm-like bodies of small size, with polished scales, all of the same kind; the mouth very small; no teeth in the lower jaw; upper jaw projecting far beyond the lower; eyes small; generally covered by a thin, transparent horny plate.

Genus **TYPHLOPS.**

Head depressed, furnished with plates; snout rounded at its extremity; rostral plate folded back over the muzzle, extending more or less over the front of the head; pupils of the eyes round, more or less distinct; nostrils lateral, semicircular.

Typhlops vermicularis.

Typhlops vermicularis, DUM. et BIB. vol. vi. p. 303; SCHINZ, Europ. Faun. vol. ii. p. 37.

DESCRIPTION.—Tail conical, blunt, slightly bent, about one-fourth longer than the transverse diameter of the head;

the sides of the head, the front, and lower part of the muzzle very convex, the upper portion being quite flat; the upper jaw is much longer and broader than the lower; the eyes distinctly visible through the plates which cover them; scales hexagonal on the anterior portion of the body, on the hinder half four-sided; along the body are twenty-one rows, and on the tail twelve transverse rows of scales. The upper surface is tawny, sometimes mottled with bright brown; the lower regions dull white.

Entire length, 10 inches; tail, about $\frac{1}{4}$ inch.

Feeds on worms and small insects.

Obtained by the French Scientific Expedition in the Morea and the Islands of the Greek Archipelago. Observed at Tiflis, in Georgia, and in the Peninsula of Sinai, in Arabia.

Genus **ERYX**.

Nostrils lateral, situated between the internasal and the nasal plates; head covered with scales, excepting on the muzzle, where there are one or two pairs of plates; scales of the back more or less distinctly tectiform or keeled; subcaudal plates entire; tail short and thick; muzzle a sort of snout, narrowed and wedge-shaped, adapted for penetrating sandy soils. In general appearance resembling the Boas. Lives under stones and dead leaves, feeding on worms, slugs, lizards, and other small animals.

Eryx jaculus.

Eryx jaculus, DUM. et BIB. vol. vi. p. 463.

Eryx turcica, SCHINZ, Europ. Faun. vol. ii. p. 38.

DESCRIPTION.—The end of the muzzle is wedge-shaped, encased in the rostral plate as in a sheath; tail subconical, not angular, as in some other species, very blunt at its extremity, which is encased in a large scale; the scales of

the body are in from 37 to 51 longitudinal rows, and form from 238 to 298 transverse rows ; on the tail the scales are in 23 to 31 longitudinal, and in 23 to 33 transverse rows. The upper parts are dull yellow, with numerous brown spots of various shades and forms, being sometimes round or oval, but generally angular ; in some cases much larger than in others, and in many specimens replaced by transverse bars, or zigzag lines ; beneath, the colour is yellowish white, either uniform or with numerous black specks or small spots, especially along the sides of the belly ; from the gape to behind the eye is a dark brown band.

Entire length, 21 inches ; tail, 1 inch.

Brings forth its young alive. Feeds on lizards and other small animals. In Egypt this snake is often exhibited as a Cerastes by persons who imitate the horns by inserting a bird's claw over each of its eyes.

Inhabits Greece, Turkey, the Islands of Naxos and Tenos, but chiefly Egypt, and other parts of Northern Africa ; also Tartary.

Family COLUBRIDÆ.

Non-venomous Snakes. Teeth without tubes, and but seldom grooved ; the head covered by broad plates ; the scales on the under side of the tail divided into pairs along its whole length.

Genus COLUBER.

Head covered by plates of different sizes ; mouth with three rows of teeth which are curved backwards, namely, two rows on the jaws and one on the palate.

Coluber scalaris.

Rhinechis scalaris, DUM. et BIB. vol. vii. p. 227; BUON. Faun. Ital. (figured).

Coluber scalaris, SCHINZ, Europ. Faun. vol. ii. p. 42.

DESCRIPTION.—The head is distinct from the body, conical, wide at its base; muzzle ending in a point formed by the projection of the rostral plate; the body is cylindrical, the angles of the belly not being prominent; the tail is short and conical; the scales of the back smooth; the scales on the body are arranged in twenty-seven to twenty-nine longitudinal rows, those on the tail in from six to eight rows; the plates on the throat are two or three in number, those on the belly from 206 to 216; two anal plates, and from forty-eight to sixty-two subcaudal divided ones; the maxillary teeth are 15 above, 17 below; palatines, 10; pterygoid, 8. The general colour of the adult is tawny red-brown; all along the back and tail are two black lines, united at nearly equal distances by broad black bands, from whence the specific name has been derived; these bands are less distinct on the anterior portion of the animal, and in many instances, generally in male animals, are altogether wanting, in which state it has been mistaken for a new species, under the epithet of "*bitæniatus*;" on the sides are small, united black spots, forming oblique bars, alternate in general with the marks on the back; belly dull white, spotted with greyish black.

In the young the general colour is light grey; the black lateral lines on the back do not exist, so that the spots on the median line are not united. The dark spots on the belly are much closer than in the adult.

The entire length sometimes exceeds 4 feet.

It is found commonly in Spain, the South of France, and the Morea. In Italy, according to Prince Buonaparte, it

is rare, and confined to the neighbourhood of the French frontiers. The authors of the 'Erpétologie Générale,' however, say that it occurs all over Italy and its islands.

Coluber Dione.

Elaphis Dione, DUM. et BIB. vol. vii. p. 248.

Coluber Dione, PALLAS, Zoog. Ross. As. vol. iii. p. 40.

DESCRIPTION.—Two anal plates; the body slim, cylindrical, smaller near the origin of the tail than in the middle of the body; head small, squared; snout very slightly compressed at its extremity; in front of the eye is a sort of furrow formed by the concave surfaces of the two pre-ocular plates; twenty-five rows of scales along the body, eight along the tail; five gular plates, 198 ventral, two anal (or one divided), sixty-two or sixty-three subcaudal divided plates. Maxillary teeth, 18 above, 17 below; palatines, 9; pterygoid, 12.

The colouring, according to Pallas, is as follows:—

Var. A. With three lighter longitudinal bands on the general ash-grey tint of the upper surface; between these bands are round alternate spaces covered with a black network, and arranged in two series; along each flank to the tail is another less distinct light line; the abdomen is white, with small black marks and red points; the head is reticulated with black lines, which run especially along the sutures of the plates.

Var. B. Found near the River Cuma. Without light bands; on the head a round dark spot edged with black; before the eyes a long, linear brown space; two longitudinal spots edged with brown run down from the nape of the neck, and are good characteristics of the variety. M. Eichwald describes the colour of the belly as distinctly flesh-colour, with four or more regularly-disposed black spots on each plate, and the upper surface of the tail with transverse black bands. It is supposed that the three light

bands above mentioned are distinct only in mature age, being very obscure in the young, which have a number of reticulations on the back.

Entire length, about 3 feet.

This Serpent inhabits the environs of the Caspian Sea, in dry and sandy places ; near the Cuma, Ural, or Jaik, and the Volga.

Coluber Sauromates.

Elaphis Sauromates, DUM. et BIB. vol. vii. p. 288.

Coluber Sauromates, PALLAS, Zoog. Ross. As. vol. iii. p. 42 ; SCHINZ, Europ. Faun. vol. ii. p. 51.

DESCRIPTION.—This species is very closely allied to the foregoing, the chief difference apparently consisting in the colouring. The anal plate, as in that species, is double, and there are two pre-ocular plates ; the snout is somewhat prolonged, blunt, and rounded at its extremity, with a slight hollow before the eyes ; the body is thin, not fleshy, prolonged, fusiform ; the back is convex, and the sides are somewhat angular, because of the extension upon them of the ventral plates ; scales on the centre of the back keeled, those towards the head and tail being smooth ; the scales of the body form twenty-three or twenty-five longitudinal rows ; ventral plates, 204 to 220 ; subcaudal plates numbering sixty-three or sixty-four divided. Nothing is known of the number or arrangement of the teeth. Each dorsal scale is brownish in the middle, with a circumference of dull yellow, causing an appearance of brown streaks ; across the back are brown spots irregularly disposed and mixed with yellow spots ; the scales on the flanks are lighter, each with a brownish centre, forming longitudinal lines along the sides ; the belly is uniform light yellow, sometimes with angular and round spots distributed along the line of junction of the belly and sides ; sometimes these are absent,

and are found along the under surface of the tail ; the upper part of the head is brown, except near the crown, which is nearly black ; a black oblong line runs from the eye to the angle of the mouth.

Entire length, from 3 feet 6 inches to 5 feet.

Found by Pallas in great numbers near Perekop, and on the plains of the Crimea in ditches ; and not uncommonly near the Dnieper.

Coluber Elaphis.

Elaphis quater-radiatus, DUM. et BIB. vol. vii. p. 254.

Coluber Elaphis, SCHINZ, Europ. Faun. vol. ii. p. 41.

Natrix Elaphis, BUON. Faun. Ital.

DESCRIPTION.—The anal plate is double ; there are two pre-ocular plates ; the head is slightly enlarged near the temples ; snout not very prominent ; tail more slender than in the last species ; in front of the eye is a furrow formed by the concavity of the pre-ocular plates ; the scales of the body are generally oval-lozenge-shaped ; on the front and middle of the back, however, they are rather lanceolate, all very distinctly keeled, the scales on the tail less so ; the scales on the sides are larger than those above named, and are without keels ; on the lower surface of the scale which forms the extremity of the tail is an indistinct channel or furrow ; on the body are twenty-three or twenty-five longitudinal rows ; on the tail, eight rows of scales ; the gular plates are three ; ventral, 200 to 207 ; according to Metaxa and Miller, they are sometimes 224 ; caudal plates, sixty-five to seventy-seven pairs ; maxillary teeth, 19 or 17 above, 21 below ; palatine, 10 ; pterygoid, 12 or 14. The general colour is brownish yellow, more or less dark, lighter below, with some grey spots. The most remarkable characteristics are two very dark lines running along each side from the head to the origin of the tail, about one-third of an inch

apart, losing themselves, as it were, in the tail, which is coloured otherwise like the trunk; the head is brown, with two black lines from the eye to the angle of the mouth.

In the young animal there are three rows of brown spots on the back; spots of the same colour on the sides; belly dark steel-grey marbled with white.

The tail is about one-fifth of the entire length, which frequently exceeds 5 feet.

It is the largest of European Serpents, and the most easily tamed. Is said to prefer hilly districts.

Inhabits many parts of Southern Europe, the whole of Central and Southern Italy, where it is very common, but is not found in Lombardy, although met with again in Austria and other parts of Germany. Prince Buonaparte found it common on the hills around Rome. Is not common in the South of France. Has been found, but very rarely, in the Department of the Maine-et-Loire. Occurs in Spain (in Arragon and Catalonia), Dalmatia, several parts of Hungary, especially the Bannat, and about Mehadia; also in Greece, being found near Athens.

Coluber Æsculapii.

Elaphis Æsculapii, DUM. et BIB. vol. vii. p. 278.

Coluber flavescens, SCHINZ, Europ. Faun. vol. ii. p. 44; BUON. Faun. Ital. (figured).

Coluber Æsculapii, CUVIER, Règ. Anim.

DESCRIPTION.—The head is unusually narrow at the temples; muzzle not very prominent; the anal plate divided; one pre-ocular plate; the body is prolonged, not very distinct from the head; the dorsal scales are keeled only on the hinder half of the body, and nowhere distinctly; the terminal scale of the tail is often channeled on the upper surface; the scales of the trunk form from twenty-one to twenty-five longitudinal rows, those on the tail from six to

eight rows; maxillary teeth 18 above, 25 below; palatine, 10; pterygoid, 12. The general colour is uniform olive above, and light green-yellow beneath; some of the scales of the sides, especially those near the belly, display a white spot on either the upper or lower margin, or on both; these spots are less conspicuous towards the tail than towards the head; the head is of the same colour as the back, and without any black streaks, but behind the gape on each side of the neck is a bright yellow spot; behind the eye, and on the labial plates on each side, is an irregular dark grey mark.

In the young animal the back is grey-brown, with four rows of spots of a much darker shade.

The entire length often exceeds 4 feet.

This Snake is a native of many, if not of most, of the warmer countries of Europe. It is common in several parts of Germany, especially at Schlangenbad in Nassau. Found all over Italy, most commonly in Lombardy, the Agro Romano, and Calabria. Prince Buonaparte says that those found in parts of the Duchy of Spoleto have a yellow tinge; and in Sicily, where it is frequent, are distinguished by a dark red-brown line along each side of the body. Is not abundant in the South of France. Inhabits the Carpathian Mountains, Hungary, and Carniola. In Switzerland, Schinz records it as of rare occurrence, and only in the Cantons of Ticino and Vallais.

Coluber quadrilineatus.

Ablabes quadrilineatus, DUM. et BIB. vol. vii. p. 319.

Coluber quadrilineatus, PALLAS, Zoog. Ross. As. vol. iii. p. 40.

Coluber Leopardinus, SCHINZ, Europ. Faun. vol. ii. p. 47; BUON. Faun. Ital. (figured).

DESCRIPTION.—The head is short, scarcely divided from the body, which is cylindrical; scales smooth, without any

trace of keel, narrower on the back than on the sides; ventral plates much pressed back against the lower edge of the flanks, but without producing distinct angles, numbering from 222 to 250; two gular plates, and from seventy-five to eighty-six subcaudal, divided; anal plate also divided. Maxillary teeth 20 above, 25 beneath; palatine, 12; pterygoid, 15. There are two varieties of this Snake, distinguished from each other by differences of colouring.

Var. A. The general colour of the upper surface is ash-grey; along the spine from head to tail runs a white band, narrowed at intervals by the encroachments of the lateral lines, which are of a brown tint, edged on each side with black; on each flank is a series of small oblique black bands, directed backwards; beneath this series is an indistinct appearance of a second lateral line; the lower surface is nearly white in its anterior portion, where it is sprinkled with brown and blue spots; further back the plates of the abdomen are dark greyish brown. M. Nordmann relates, that a short time after death these spots are brightly metallic with a rosy tint; a black mark runs from one eye to the other, passing immediately before the anterior edges of the frontal and ocular plates; two black lines begin on the frontal plate, one of which passes behind each eye, and ends in front of the gape; between the lower margin of the orbit and the lower lip is a black mark.

In the young there is a distinct white band down the middle of the back, with a red-brown streak on each side of it, and outside this a short white stripe.

Var. B. The markings of this variety justify the denomination of *C. Leopardinus*, adopted by Fitzinger, Buona-parte, &c. On the middle region of the back are a number of red, or red-brown spots, not unlike those of the Leopard, of irregular shape, edged with black, and some of them, as it were, divided into two parts, separated from each other

by whitish intervals, having the appearance, when taken together, of an interrupted whitish band; sometimes along the tail the spots touch each other; beneath, and on either side, is a row of black marks, much less extended than the dorsal spots, placed on a ground which is darker than the general grey-brown of the back, and which is not interrupted between the marks, forming consequently a second brown band; the abdomen is yellowish in front, with blue-black spots, which latter colours occupy the whole of the remaining part of the under surface of the animal; the black lines of the head are the same in both varieties.

In the young the dorsal spots do not appear as if divided into two, and the dorsal lines are not distinct, those on the sides, however, are well developed.

Entire length, about 4 feet.

Inhabits the Southern Provinces of Russia. Is rare in the Crimea (where M. de Nordmann found it most commonly near Laspi, on the hills of the south coast), in Dalmatia, and especially in the small island of Lissa, in caves, the Morea, and Crete. Has been found on a few occasions in the Terra d'Otranto in Italy. At Catania, in Sicily, it is said to frequent the houses, and not to occur in the neighbouring country districts.

Coluber Natrix.

Coluber Natrix, SCHINZ, Europ. Faun. vol. ii. p. 38.

Tropidonotus Natrix, DUM. et BIB. vol. vii. p. 555.

Natrix torquata, BELL, Hist. Brit. Quad.

The Ringed Snake.

DESCRIPTION.—Head distinct from the body, wide behind, especially in old individuals; one pre-ocular and three post-ocular plates; seven labial plates, divided by black marks; the gape is as long as the head; tongue bifid to one-third of its length; tail very tapering, moderately

pointed ; scales of the back oval, distinctly keeled, those of the sides broader, with the keel less marked, or nearly wanting ; ventral plates about 170 ; subcaudal from fifty-six to sixty-five pairs. The upper parts of the body and head are light brownish grey with a green tinge, sometimes approaching to dull pale olive ; behind the head is a broad collar, or two crescents of bright yellow, with deep black borders on their hinder edges ; sometimes these are confluent : down the back are two rows of small, alternate black spots ; along the sides are large black spots, varying in size and in the distance between them ; under surface dull bluish or lead colour, sometimes marbled with black. The female, as in Serpents generally, is much larger than the male.

Entire length, up to 4 feet.

Lays from nine to fifteen eggs, which are joined together by a glutinous substance. Frequents chiefly moist situations, swims well, and is fond of the water. Feeds on frogs, mice, and other small animals.

Is the most common Snake of Europe, in every country of which it is found, from Sicily to Sweden, excepting Ireland, and the extreme North of Russia. M. Crespon says that in the South of France it is eaten by the peasants.

Coluber Viperinus.

Tropidonotus Viperinus, DUM. et BIB. vol. vii. p. 560.

Coluber Viperinus, } SCHINZ, Europ. Faun. vol. ii. pp. 39, 40.
Coluber tessellatus, }

Natrix Viperina, } BUON. Faun. Ital. (two articles, and figures).
Natrix tessellata, }

DESCRIPTION.—Head not very distinct from the body ; muzzle thick ; one or two pre-ocular, always two post-ocular plates ; seven pairs of plates on the upper lip, the third and fourth of which touch the margin of the eye ; the scales

are keeled, but not prominently, arranged in nineteen longitudinal rows; ventral plates, 151 to 154; subcaudal, fifty-three to fifty-five pairs; anal plate double.

Entire length, up to 3 feet.

This Snake so closely resembles the Common Viper as to be easily mistaken for it; it is by the wide plates and large central shield of the head and forehead that it may be most readily recognized. Like all others of the genus, however, it is perfectly free from venomous qualities. The general colour is greenish grey or dull yellow; along the middle of the back is a row of brown or black spots, either near together or touching each other, sometimes so much united as to form a zigzag line, as in the Viper; between these spots are generally several black markings; on the sides are many transverse black spots, grey or greenish at their centres; the belly is more or less covered with bluish black spots; in most individuals there are oblique lines running from the eye to the nape of the neck on each side, forming by their junction there a figure like the letter V.

MM. Dumeril and Bibron describe the "*Natrix chersoides et ocellata*" of Wagler, which is probably the *Coluber Viperinus* of Schinz, and *Natrix Viperina* of Buonaparte, as a variety of the *C. Viperinus* of their great work. Its colours are thus given:—

Var. A. Along the back are two wide, parallel, pale yellow streaks, separated by a black band; general colour of the upper parts greenish brown; belly and flanks marked most variably and irregularly bluish black.

The *Coluber Viperinus* is found very commonly in the South of France in ditches and streams (Crespon), in Spain and Sardinia. This Snake occurs abundantly in Italy, in stagnant waters; in France, Spain, Hungary, and Germany. In the Canton of Ticino, in Switzerland, and in the

Vallais it is not rare. Freyer includes it among the Reptiles of Carniola.

This species appears to require further investigation, as to whether or not it includes two or even more.

Coluber hydrus.

Tropidonotus hydrus, DUM. et BIB. vol. vii. p. 564.

Coluber hydrus, PALLAS, Zoog. Ross. As. vol. iii. p. 36.

DESCRIPTION.—Three pre-ocular and four post-ocular plates; tongue very long and black; the bones of the palate are furnished with about thirty teeth on each side, these are much hooked and very thin; the dorsal scales are keeled, slightly forked at their free ends, in nineteen longitudinal rows, those next to the abdomen are without keels; ventral plates, 167 to 180; subcaudal, sixty-two to sixty-five pairs; anal plate double. Closely resembling in shape the *C. Natrix* and *C. Viperinus*, and with similar habits. The upper parts of the body are olive-brown, generally with regularly arranged black spots, which are disposed in quincunx; these spots are sometimes wanting, when present they are good distinctive marks; the lower parts are dull yellow, with black, or sometimes, but less commonly, blood-red spots. It is supposed that there are several variations in the colouring, dependent upon climate and age, which have not been accurately defined.

Entire length, about 3 feet; tail, about 6 inches.

Pallas found this Snake frequent around the Caspian, in the Sea itself, as well as in the rivers and salt-marshes adjoining. It is said by M. Nordmann to be very common all through Southern Russia, and at Odessa to have been observed in pursuit of fish, generally a species of *Gobius*.

Coluber Austriacus.

Coronella lævis seu *Austriaca*, DUM. et BIB. vol. vii. p. 610.

Coluber Austriacus, BUON. Faun. Ital. (figured).

Coluber lævis, SCHINZ, vol. ii. p. 45.

DESCRIPTION.—Never attains to a very large size. The head but slightly distinct from the body; tail short, strong at its base; eyes small; the rostral plate presses much upon the muzzle, is of a triangular form, with its top pointed; there are seven labial plates on the upper lip on each side, of which the third and fourth touch upon the eye; scales of the body smooth, rhomboid, in nineteen longitudinal rows; ventral plates, 160 to 164; subcaudal, sixty to sixty-four pairs; one anal plate divided; the upper maxillary teeth are on the same line with the others, and longer; the upper parts are greenish brown, with two parallel rows of black markings along the back, more distinct towards the head than in the hinder portion; sometimes the spots on the back are small, and few in number; the lower parts have a lighter ground colour, but are often much darkened by black marblings.

Entire length, about 2 feet.

Inhabits Central and Southern Europe; various parts of France, but is not very common in the South of that country. Sicily, the whole of Italy, and its islands, but is more frequent in the north than in the south of that peninsula. Is included in the Fauna of Galicia and the Bukovina, Silesia, and Carniola. In Switzerland, is common near Zurich. Rare in Belgium, where it has been met with near Louvain, and on the right bank of the Moselle. Schinz states that it is found as far North as Sweden, and is everywhere less common than *C. Natrix*.

Coluber Girundicus.

Coluber Girundicus, CUVIER, Règ. Ann.

Coronella Girundica, DUM. et BIB. vol. vii. p. 612.

Coluber Riccioli?, BUON. Faun. Ital. (figured?).

La Bordelaise, DAUDIN.

DESCRIPTION.—Resembles the *C. Austriacus*, but may be distinguished from it—1st, by having eight labial plates; 2nd, by the form of its rostral plate, which comes up but little upon the muzzle, where it ends in a very obtuse angle; 3rd, by its colouring, having but one row of black transverse spots along the back; 4th, because in most of the ventral and subcaudal plates one-half is black, and they are either alternate or opposite. Teeth, same as in the preceding species; the scales are smooth, hexagonal, or rhomboid, imbricated, in twenty-one longitudinal lines; ventral plates, 174 to 190; subcaudal, sixty-two to sixty-four pairs; the tail ends in a horny point. General colour of the upper parts ash-grey; belly yellowish, with four-sided black spots.

Entire length, under 2 feet.

Is said to be easily tamed, and to frequent vineyards and hilly places more than plains.

Inhabits the South of France, where M. Crespon relates that it is not uncommon in the Department du Gard.

Coluber Monspezzulanus.

Coluber Monspezzulanus, SCHINZ, Europ. Faun. vol. ii. p. 49; BUON. Faun. Ital. (figured).

DESCRIPTION.—Head long, much compressed, concave towards the forehead; the muzzle is blunt, and projects a good deal beyond the lower jaw; the opening of the mouth extends back far behind the eyes, which are placed over its centre; they are large, and overhung by the plates of the head; occipital plate longer than wide, truncated at

top ; there is one very large pre-ocular plate, two post-ocular, no subocular, eight labial plates on the upper lip, ten on the lower ; temples covered with scales ; the dorsal scales are smooth, hollowed in the middle, lanceolate, those on the flanks much larger, subtriangular, forming in all nineteen longitudinal rows ; ventral plates, 168 to 182 ; subcaudal, seventy-five to ninety pairs ; the head and upper parts of the body are olive, with a red-brown tinge ; each plate of the head is edged by a narrow dusky brown line, over each eye is a small round spot of the same colour ; down the back are numerous oblong irregular black spots ; along the side run two parallel black streaks, the lower of which appears as if interrupted, from the circumstance of the scales on which it runs being of a lighter hue at their centres than at their extremities ; the upper lateral streak is wider, and is really interrupted, passing over, as it were, two or three scales in succession ; it occupies the fourth row, counting from the margin of the ventral plates ; many of the dorsal scales have very narrow brown edges and black tips ; the belly is dull yellow, along it run six or eight dark parallel streaks, not well-defined, but sufficiently so to give the surface a ruled appearance ; the under part of the tail is ashy, marbled with lighter tints, and sprinkled with dusky specks ; the colours of the species are very bright for a short time subsequent to the change of skin, the back being a fine green colour, with jet-black spots ; the sides azure ; the belly clear yellow, with black or bright blue marks.

The variety described by Buonaparte as *C. Neumayeri*, is uniform dusky olive on the upper parts of the head and body ; the stripes along the sides of the back are wanting, but the scales on those parts have a streaked appearance, resulting from their margins being of a much lighter tint than the centres ; the scales in general are each dusky at

the tip, with a black spot at the base contiguous to the tip of the preceding scale ; the plates of the belly are much more-occupied by dark streaks than in the typical animal, and along each side of the tail runs a wavy line of light ash.

Entire length, from 3 to 4 or even 5 feet.

M. Crespon, in his 'Faune Méridionale,' records an instance where one of these snakes was taken when swallowing a young rabbit.

It is not rare in the Department du Gard, and occurs elsewhere in the South of France. Inhabits Dalmatia, the Ionian Islands, Istria, and Spain. In Italy, has occurred near Nice, and in Sicily. Said to be a native also of North Africa.

It is not mentioned in the 'Erpétologie Générale.'

Coluber hippocrepis.

Periops hippocrepis, DUM. et BIB. vol. vii. p. 675.

Coluber hippocrepis, SCHINZ, Europ. Faun. vol. ii. p. 51 ; BUON. Faun. Ital. (figured).

DESCRIPTION.—Head wide behind, prolonged, distinct from the body ; the labial plates do not touch upon the eye ; a series of subocular plates intervening between them ; the labial plates are nine in number on each side ; on the temple are sixteen small scales ; the frontal plates are wide, pressed down on the muzzle, which inclines distinctly downwards ; the scales of the back are long, very oblique, imbricated with blunt points, not keeled, forming twenty-seven longitudinal rows ; ventral plates, 246 ; sub-caudal, ninety-eight pairs ; anal double ; the ventral plates rise somewhat on the flanks ; the tail is stout, not long, and, like the belly, flat beneath. The colouring varies considerably, but the ground is generally dull yellow or red-brown, with dark spots on the back and sides, those on

the latter squared; the top of the head is marked with transverse lines, conspicuous especially in the young; there is often on the head a curved streak like a horseshoe, which, though far from constant, has given the name to the species; in the adult, the belly is much marked with black; frequently on the back is a row of angular brown marks, with yellow margins; a black mark extends from eye to eye.

Entire length, upwards of 3 feet.

Is common in Spain and Sardinia, and, according to MM. Dumeril and Bibron, in Italy, but Prince Buonaparte states that it is unknown there. Is found in Greece, Barbary, and Egypt.

Coluber viridiflavus.

Zamenis viridiflavus, DUM. et BIB. vol. vii. p. 686.

Coluber atrovirens, SCHINZ, Europ. Faun. vol. ii. p. 45.

Coluber viridiflavus, BUON. Faun. Ital. (figured).

DESCRIPTION.—Head oblong, squared, the plates above the eyes projecting over the orbits; central plate of the forehead narrow; on each side are eight labial plates, of which the fourth and fifth touch the eye; there are two pre-ocular, and as many post-ocular plates; nostrils quite lateral, placed between two plates; the scales are not keeled, they are very long, larger towards the sides, those on the centre forming nineteen rows; ventral plates, 198 to 202; subcaudal, 110 to 112 pairs; anal double. One of the handsomest European Snakes. The back and sides are dark green, the centre of each scale being generally spotted with yellow; the head is also marked with yellow, which forms a sort of pattern; the yellow spots on the anterior part of the body are united, and collected into small transverse irregular bands; this appearance ceases behind the first third of the back, after which they are replaced by

yellow longitudinal lines, interrupted at first, but towards the tail continuous ; the lower parts are yellow, with a black or red-brown mark and line on the extremities of each plate. The young may always be known by the yellow patterns on the head, but they are without the yellow marks on the rest of the body, and sometimes have small, indistinct, transverse bands of a brown tinge. Deep brown and perfectly black varieties have been met with in Sicily and Egypt. Lives in woods in cultivated districts.

Entire length, up to 4 feet, oftener 3 feet 6 inches.

One of the most common species of the South of Europe. Inhabits the South of France, especially near the Pyrenees, Burgundy, the Department of the Moselle, on the banks of the Orne, and near Dinant ; and, according to MM. Dumeril and Bibron, the province of Brittany. Very common near Rome, where it is the most abundant species ; and is found in many other parts of Italy, and in the Morea. In Switzeland, only in the Cantons of Ticino and Vallais, where it is rare. Appears in the list of reptiles found in the Bukovina.

Coluber trabalis.

Zamenis trabalis, DUM. et BIB. vol. vii. p. 689.

Coluber trabalis, PALLAS, Zoog. Ross. As. vol. iii. p. 42.

Sheltopús of the Russians.

DESCRIPTION.—On the palate are two ridges furnished with teeth ; one row of simple teeth on the jaw, projecting but slightly above the gums ; the tongue is black, and very long ; the rostral plate vaulted ; the upper pre-ocular plate much larger than the lower one ; there are two post-ocular plates ; on the upper lip, on each side, are eight labial plates, of which the fourth and fifth touch the eye ; dorsal scales oblong, somewhat convex, not keeled, those

on the sides oval, a little larger than the former ; ventral plates from 199 to 210 ; subcaudal, fifty-two to seventy-four pairs ; anal plate double ; scales of the body in nineteen longitudinal rows ; the head above is ash-grey ; the margin of the jaws pale or yellow, with brown on the sutures ; on the neck and under eyes, are dark brown spots ; the upper part of the body is ash-grey, with a small line of pale yellow along the scales, giving them a streaked appearance ; sometimes there are three yellow lines ; the belly is always pale yellow, sometimes with scattered livid spots or brown lines.

The entire length sometimes considerably exceeds 4 feet, it being one of the largest European species.

Is recorded by Pallas as frequenting arid districts in Southern Russia, between the Dnieper and Jaik. In the Crimea, and on the shores of the Caspian.

Coluber Dahlii.

Zamenis Dahlii, DUM. et BIB. vol. vii. p. 692.

Coluber Dahlii, SCHINZ, Europ. Faun. vol. ii. p. 48.

Tyria Dahlii, BUON. Faun. Ital. (figured).

DESCRIPTION.—The rostral plate is flat, not vaulted or projecting, hardly higher than its width ; two pre-ocular plates, the lower of which is smaller by one-half than the upper ; two post-oculars, eight labials, of which the fourth and fifth touch the eye ; plates above the eye projecting considerably over it ; scales on the temples differing little from those of the body, which are not keeled, and are disposed in nineteen longitudinal rows ; ventral plates, 214 to 216 ; subcaudal, 124 to 126 pairs ; anal double. The body of this Snake is very long in proportion to its thickness, slightly angular at the sides of the belly, narrowed a good deal towards the head, but more towards the tail, which is very long. The colour of the upper parts is dark

greenish grey, sometimes with a red-brown tinge ; on the anterior portion of the back and sides are rounded brown spots, edged with pale yellow, forming one of the distinctive characters of the species ; around the eye is an interrupted border of light yellow, arising from the pre-ocular and post-ocular plates being of that colour.

Entire length, about 3 feet 6 inches.

Inhabits Dalmatia, and was obtained in Greece by the French Scientific Expedition. Said to be a native also of Persia.

Coluber Riccioli.

Coluber Riccioli, SCHINZ, Europ. Faun. vol. ii. p. 43 ; BUON. Faun. Ital. (figured).

Coluber rubens, GACHET, Bullet. Soc. Linn. Bordeaux, iii. p. 255.

DESCRIPTION.—Head distinct from the body ; nostrils situated at the junction of the nasal plates ; two post-ocular plates, those above the eyes projecting considerably over and in front of them ; the scales of the body are polished, obscurely hexagonal, and without any trace of a keel ; there is a faint appearance of a ridge along the back ; ventral plates, 184 ; subcaudal, sixty-four pairs ; these numbers are more constant than is usual ; the back is grey or olive, with a reddish tinge, with two contiguous rows of alternate dusky spots edged with black, often confluent ; along the side runs an indistinct dusky line, beginning at a long curved black spot on the side of the neck ; above and below this line a reddish tint prevails, caused by numerous rose-coloured specks upon the scales of that region, some of which are edged with white ; the lower portions of the flanks are lighter than the upper ; the belly is clear, canary-yellow, with two wide, longitudinal groups of black angular spots, some contiguous, others separate ; another similar group runs between these from the throat

for a short distance ; the markings vary much in intensity in different individuals, some being much brighter than those here described, others very much more obscure and indistinct.

The entire length of a very large specimen, mentioned by Prince Buonaparte, was 2 feet 4 inches, of which the tail was 6 inches ; these dimensions, however, are much above the average.

Said to be easily tamed, and not to bite.

This Snake was discovered not many years ago near Rome by Signor Riccioli. Prince Buonaparte, who has figured and described it, says that it is not uncommon there, he having found it on Monte Mario, and near the Anio, on hills to the right of the Via Salaria, also on the mountains near Ronciglione. It is said to have occurred near Bordeaux, on the Garonne ; but has not been observed between those two localities, so far apart from each other.

Tarbophis vivax.

Tarbophis vivax, DUM. et BIB. vol. vii. p. 913.

Coluber fallax, SCHINZ, Europ. Faun. vol. ii. p. 48.

Ailuropphis vivax, BUON. Faun. Ital. (figured).

DESCRIPTION.—The rostral plate, resting vertically upon the extremity of the muzzle, has a semicircular notch in its lower part ; it exhibits seven unequal facets, six of which correspond with the six adjoining plates, while the seventh gives passage to the tongue ; the frontal plate is oblong, and forms an isosceles triangle ; the pre-ocular has four facets ; the two post-oculars are five-sided, and nearly equal ; temples clothed with about twenty scales, one of which is much smaller than the rest ; eight labial plates on the upper lip, of which the fourth and part of the fifth are immediately under the eye. The scales of the body are smooth, lozenge-shaped, rather larger at the base of

the flanks than elsewhere, disposed in nineteen longitudinal rows, those of the tail in four or six rows; ventral plates from 191 to 210; subcaudal from fifty-eight to sixty pairs; Prince Buonaparte, however, says that the former reach sometimes to 250, while the latter are occasionally only forty pairs. The total number of teeth about seventy; the width of the head between the temples is three times the space between the nostrils and the top of the nose. The colouring of the upper parts is dull olive, or light or dark grey, sprinkled thickly with minute black spots, scarcely visible without a lens; the plates of the head are speckled with chestnut, with a patch of that colour from the eye to the mouth; on the nape is a large spot of dark chestnut, and down the back a series of large rounded spots of the same colour, flanked on either side by another row of smaller ones; the parts beneath are white or dull yellow, with numerous patches of minute black specks, and with black marks on the margins of the ventral plates.

Entire length, about 2 feet 4 inches, of which the tail occupies the sixth or seventh part; sometimes a much greater length is attained.

The young are produced alive.

Inhabits Dalmatia, the environs of Trieste, Istria, Albania, the Morea, and other parts of Eastern Europe; also Bakou, on the Caspian, and Egypt.

Family VIPERIDÆ.

Venomous Snakes of moderate size; the upper maxillary bones armed with generally two isolated poison-fangs.

Genus **PELIAS**.

Anterior portion only of the head covered with flat or slightly concave shields, of which the central one is the

largest ; nostrils lateral, no pit between them and the eyes ; subcaudal plates double.

Pelias Berus.

Pelias Berus, DUM. et BIB. vol. vii. p. 1395 ; BUON. Faun. Ital. (figured) ; BELL, Hist. Brit. Rep.

Pelias cherssea, BUON. Faun. Ital.

Vipera Berus, SCHINZ, Europ. Faun. vol. ii. p. 53.

The Viper, or Adder.

DESCRIPTION.—The head is somewhat depressed, almost oval, slightly widening behind the eyes ; gape as long as the head, ascending behind ; no teeth in the upper maxillary bones except the poison-fangs ; a row of small teeth on the palatine bone on each side ; neck rather smaller than the back of the head ; body increasing to near the middle, scarcely diminishing to the vent ; tail becoming almost abruptly smaller, tapering, pointed at tip, not more than one-eighth of the entire length of the animal ; head covered with small scaly plates, regular in some specimens, but often irregularly disposed ; the central and two occipital plates are the largest ; scales of the back and sides suboval, imbricated, and distinctly keeled, forming eighteen longitudinal rows ; ventral plates, 140 to 150 ; subcaudal, about thirty-five pairs ; the ground colour varies considerably, sometimes being olive, sometimes deep brown, or dull yellow, or pale grey ; along the back, from the neck to the tail, is a waved wide line of dark brown or black ; sometimes, instead of this line, there is a row of irregular angular spots, having their greatest length across the animal ; these spots again, in some specimens, are joined by a narrow line ; on either side of this dorsal line of spots there is frequently a series of dark grey or black marks, alternating with those on the back ; and below these, near the junction of the ventral plates with the scales of

the sides, is a row of dirty white spots; on the head are several patches of black, a large one on the central plate, which occupies the crown of the head, and afterwards branches right and left, forming a V on the back of the head, the branches rather curving outwards. The colouring varies very greatly, a red-brown tinge sometimes pervading the surface, constituting the *P. chersea* of Prince Buonaparte's work; the belly is dark, often blue-black. This species cannot always be distinguished by its markings alone from the genus *Vipera*, the only constant differences being the narrowness of the muzzle, the plates on the head, and the slighter constriction at the junction of the head and spine. Individuals entirely black, except under the jaws and throat, occasionally occur.

The young are produced alive, to the number of from twelve to twenty, or even more at a birth. If the Viper be roused from its winter torpor and made to bite, no injury ensues, the poison being at that season inert. It frequents dry, sandy, and waste places.

Entire length, about 2 feet.

Is found all over Central Europe, as far North as Sweden, in France, England, Scotland, Belgium, Germany, Switzerland, to the height of 6000 feet above the sea; in North Italy, and Siberia. In the 'Iconographia della Fauna Italica,' we are informed that the variety "*Chersea*" alone is found in South Italy, where it has occurred in the Abruzzi, near the Province of Ascoli.

Genus **VIPERA.**

Head depressed, widened behind, entirely covered by small scales, not by plates; nostrils wide, lateral; sub-caudal plates in pairs throughout the whole length of the tail.

Vipera aspis.

Vipera aspis et *prester*, DUM. et BIB. vol. vii. p. 1406.

Vipera aspis, BUON. Faun. Ital. (figured).

Vipera Redii, SCHINZ, Europ. Faun. vol. ii. p. 54.

DESCRIPTION.—Head depressed, heart-shaped, covered with small scales, very distinct from the body; muzzle blunt, thin, covered with small plates; scales with six faces, oblong, imbricated and keeled, at least on the hinder portion of the body, which is much thicker than the anterior part; the two poison-fangs in the upper jaw are less than three lines in length, the other teeth are small; scales in twenty-one rows, counted longitudinally; ventral plates, 140 to 165; subcaudal sometimes up to forty-six pairs in the male, sometimes not more than thirty-three pairs in the female; tail distinct from the body, ending in a sharp horny point, occupying, in the male, one-seventh or one-eighth part of the entire length, but in the female not more than a ninth or tenth.

This species may be most readily distinguished from the following by the bluntness of the muzzle, which in the latter is prolonged into a sort of snout. The colouring varies extremely in different individuals; in general the ground colour of the body is ash-grey or nearly black, with a black waved stripe along the back, sometimes continuous, but often broken up into contiguous, distinct, angular or rounded spots, the lower parts being steel-grey or reddish, with irregular white or light marks; beneath each eye is a black spot, running obliquely to the corner of the mouth; sometimes a large dark mark occupies the centre of the head.

The variety *V. ocellata* is grey, with reddish tinge above, and three rows of rounded spots edged with black; belly black, marbled with dull yellow. *V. Redii* is marked

on the body with short transverse lines, forming four longitudinal series, the dorsal line being formed by the junction of the two central rows; in some individuals there is no dorsal line, the general colour being rusty brown, with black spots; sometimes the dark lines on the head diverge so as to form the letter Y. There are many other variations observable, too numerous and uncertain to be described.

Entire length of the full-grown animal, from 18 inches to 2 feet.

This Viper inhabits desert, stony, and hilly districts throughout nearly the whole of Europe. Near Paris it is not uncommon; is found in many parts of France, but is not included by Crespon in his 'Faune Méridionale;' all over Italy and its Islands, Greece, Dalmatia, Istria, the South of Switzerland; in the Cantons of Geneva, Vaud, Vallais, and Ticino; has been met with in Belgium, in the Province of Luxemburg, in Prussia, and other parts of Germany, Poland, and as far North as Sweden, Norway, and Silesia. Is unknown in the British Islands.

Vipera ammodytes.

Vipera ammodytes, DUM. et BIB. vol. vii. p. 1414; SCHINZ, Europ. Faun. vol. ii. p. 54; BUON. Faun. Ital. (figured).

DESCRIPTION.—This species is easily distinguished from the *V. aspis* by its prolonged muzzle, which ends in a soft point, and is covered with small scales; in other respects it closely resembles the latter; in the size and position of its poison-fangs, as well as in the effects of its bite, and in the variations of colour and markings, it is not to be distinguished from it. The ventral plates are from 152 to 161; the subcaudal from twenty-eight to thirty-five pairs; the tail is about a ninth of the entire length in the male, and about a tenth in the female.

Total length, 17 inches to 2 feet.

Prefers hilly and dry places exposed to the rays of the sun ; feeds on mice, frogs, and other small animals, and is itself often devoured by birds of prey. The varieties of colour are as numerous, and of the same kind, as in *V. aspis* ; the tip of the tail, however, is said to be always of a red iron-brown tinge.

Inhabits Austria, near Vienna, and elsewhere, Hungary, Carniola, Istria, Dalmatia, and the North of Italy, especially near Ferrara ; is found in Greece, and was the only Viper obtained in the Morea by the French Scientific Expedition.

Genus **TRIGONOCEPHALUS.**

Provided with spurious nostrils, or nasal pits between the eye and the true nostril ; tail with a sharp point ; top of the head always covered with plates, of which the central is largest ; the scales of the head and back keeled. Resembles the Rattlesnakes in general appearance.

Trigonocephalus Halys.

Trigonocephalus Halys, DUM. et BIB. vol. vii. p. 1495.

Coluber Halys, PALLAS, Zoog. Ross. As. vol. iii. p. 49.

DESCRIPTION.—Plates on the head nine in number, the two first very small, rounded in front, resting on the two frontals ; the central plate uneven, surciliary plates wide, parietals long, narrowed behind ; ventral plates, from 162 to 170 ; subcaudal, about forty pairs. Upper parts pale grey, with transverse marks of olive-brown ; sometimes the spots on the back are united to each other ; on the neck is a mark in the shape of a horseshoe, prolonged, open behind, preceded by two other elongated marks beginning upon the parietal plates. In some specimens the colour of the back is greenish, with crossed and transverse white lines.

Frequents hilly and rocky places exposed to the rays of the sun. The bite, though venomous, is said to be cured by immediate washing of the wound in water.

Entire length, according to Pallas, about 2 feet, of which the tail is about 3 inches.

Was found by Pallas near Astrachan, and by Eversmann in Tartary.

Order IV. BATRACHIA.

Body depressed and short, or rounded and prolonged, with or without a tail; skin soft, naked; generally with four feet, without claws; neck not distinct from the head and body; generally provided with eyelids; no outward ear; oviparous; breathing by lungs and gills; the eggs are impregnated after exclusion, and the young undergo a metamorphosis.

Family RANIDÆ. FROGS AND TOADS.

Gills present only in the tadpole state; feet four in number; four toes on the fore-feet, the hind-feet with five toes, and sometimes with a rudiment of a sixth; no tail in the perfect animal.

Genus RANA.

Skin smooth; hind-feet very long, adapted for leaping, more or less palmated; upper jaw with a row of fine teeth, and a transverse interrupted row of the same on the middle of the palate.

Rana esculenta.

Rana viridis, DUM. et BIB. vol. viii. p. 343.

Rana esculenta, SCHINZ, Europ. Faun. vol. ii. p. 67; BUON. Faun. Ital. (figured).

DESCRIPTION.—Toes cylindrical, slightly swollen at the tips, tubercles under the joints large; webs of the toes free at their margin, slightly notched, not reaching quite to the extremity of the toe; fourth toe on the hind-foot one-third longer than the third and fifth, the two last each with a tubercle at their root; nostrils half-way between the corner of the eye and the tip of the muzzle; head triangular, as wide as long; upper eyelids wrinkled transversely on their hinder portions; tympanum circular, as large as the opening for the eye; teeth on the palate in a line exactly between the nasal openings, but not touching them, whereas in the *R. temporaria* they are a little behind those openings; tongue broad, spongy, covered with very small round granules, divided posteriorly into two lobes; the upper surface of the body with a number of scattered warts, or with small longitudinal folds, a glandular swelling on each side of the back running along the sides; the orifice which gives vent to the vocal bladder of the male is longitudinal, and placed exactly at the angle of the gape; in a full-grown individual, this bladder, when swollen, is as large as a small cherry; the skin on the belly is smooth throughout.

The length of the head and body is above 3 inches; of the fore-legs, $1\frac{1}{2}$ inch; of the hind-legs, $4\frac{1}{2}$ inches.

The colouring varies considerably, and seems to depend upon the country which the individual inhabits, although the first variety is found everywhere.

Var. A. Upper parts of the body a fine green, irregularly marked with brown or black spots; along the back are three lines of bright gold-yellow; a black streak runs from the

corner of the eye, passing over the nostrils to the end of the nose, where it meets a similar streak on the other side; on the front of the arm, near the shoulder, is a black streak, which is found in all the varieties of the animal; the lower extremity of the back is marbled with black, white, or yellow; sometimes the colour of the back is grey or brown.

Var. B. Differs from the foregoing by the absence of the yellow gold lines on the back.

Var. C. Common in Italy, Sicily, Provence, and Spain. Has all the upper surface chestnut-red, with brown marks, more or less apparent, and is probably the "*Rana maritima*" of Risso.

It passes most of its time in the water, and is found in vast numbers in many marshes and ponds. Its loud croak is known to all European travellers. In many parts of the Continent, such as France, Italy, and Germany, its flesh is considered peculiarly wholesome and delicate food. The spawn is usually attached to plants at the bottom of the water, and is seldom seen on the surface.

This Frog is found all over Europe, except in the British Islands; throughout the North of Asia to Japan, and in Egypt.

Rana temporaria.

Rana temporaria, DUM. et BIB. vol. viii. p. 358; SCHINZ, Europ. Faun. vol. ii. p. 67; BUON. Faun. Ital. (figured); BELL, Brit. Rep. The Common Frog.

DESCRIPTION.—Head nearly triangular; teeth minute, forming a single row in the upper jaw, none in the lower, also an interrupted row across the palate; tongue fleshy, soft, lobed at the tip, folded back on itself when not in use; in the fore-feet the third toe is longest, the second shortest, the first and fourth nearly equal; hind-legs more than half as long again as the body; toes on their feet webbed, the

fourth exceeding the third and fifth by one-third, whereas in the *R. esculenta* it exceeds those toes only by one-fourth; the skin is everywhere smooth except between the thighs, where it is a little wrinkled. The upper parts are brown, yellowish, or reddish, sometimes almost black, more or less spotted with black; on the legs the spots are transverse; the most constant mark is an elongated patch of brown or black on the temples, which is wanting in the preceding species, and has given its name "*temporaria*" to the present one; there is generally an indistinct whitish line down each side of the back, the space between the lines being paler than the adjoining parts; there are no vocal bladders.

Length from snout to vent, $2\frac{3}{4}$ inches, often more.

Spawns about the middle of March in shallow pools; during the greater part of the year frequents grassy places, often a long way from water.

Found in Europe from the South to the extreme North, specimens having been received from the North Cape, and generally very common; in Italy, however, it is not nearly so abundant as the *R. esculenta*. It is the common Frog of the British Islands.

Genus **DISCOGLOSSUS.**

Tongue nearly circular, but slightly three-sided, not notched or lobed, free at its hinder margin; a transverse row of teeth on the palate, placed behind the inner orifice of the nostrils; some traces of glandular swellings on the sides of the neck and shoulders; toes of the fore-feet completely free; no vocal bladder in the males; outline of the body inclined to an oval form.

Discoglossus pictus.

Discoglossus pictus, DUM. et BIB. vol. viii. p. 425; SCHINZ, Europ. Faun. vol. ii. p. 70; BUON. Faun. Ital. (figured).

DESCRIPTION.—Body much depressed, more so than in any other species of the European *Ranidæ*, its outline nearly oval; the end of the muzzle sometimes pointed, sometimes obtuse, the latter form constituting a variety described by Prince Buonaparte and M. Tschudi as a distinct species, under the name of *D. Sardus*; the upper surface is either smooth, or with small scattered tubercles varying in number and size; the hinder portion of the upper eyelid wrinkled transversely; a row of glands runs from the eye to the shoulder; in the males, during the breeding season, not only the thumbs, but also a considerable portion of the chin and belly are covered with small, thickly-set, rough, black points; the fore-legs (which are stouter in the males than in the females), when stretched along the sides, reach half-way down the thighs; the hind-legs, placed in the same way, extend beyond the nose by the entire length of the foot; the palm of the fore-foot has two tubercles; the range of palatal teeth is slightly undulating, in some individuals as long as the palate is wide, and always, though very slightly, interrupted; the lower parts are thinly sprinkled with very fine granules; these become larger between the gape and shoulder and under the jaws.

Length of the body, about $2\frac{1}{2}$ inches.

There are many variations in its colouring. The body is marbled with grey, brown, or reddish.

Var. A. All the upper surface marbled with large brown or black spots, rounded or oblong, often confluent; on the hind-legs are transverse bands of the same colour; on the crown of the head is a triangular mark, sometimes divided into two parts, and on the tympanum usually a long dark spot.

Var. B. Ground colour yellowish green ; along the back and frequently on each side a white stripe ; sometimes a similar one on the forehead meets that on the back.

Var. C. Spots on the back few or none, those elsewhere much smaller.

In all these varieties the belly is white or yellowish.

Lives in small streams and in fresh- or salt-water marshes in Greece, Sicily, Sardinia, and North of Africa, often in company with the *Rana viridis*. According to Prince Buonaparte, his *D. Sardus* is peculiar to Sardinia.

Genus **PELODYTES**.

Tongue almost circular, scarcely notched, free behind ; a group of palatine teeth at the anterior inner angle of each nostril ; tympanum distinct ; fore-feet with four toes, not webbed ; hind-toes depressed, their webs either very short or much developed ; eustachian tubes moderate ; males with a vocal bladder. Only one species known.

Pelodytes punctatus.

Pelodytes punctatus, DUM. et BIB. vol. viii. p. 463 ; BUON. Faun. Ital. (figured).

Alytes punctatus, SCHINZ, Europ. Faun. vol. ii. p. 77.

DESCRIPTION.—Head depressed, triangular ; space between the nostrils equal to half of that between the eyes ; a long narrow gland above the ear, and a small one at the corner of the mouth ; the body elongated and very slender behind ; the upper parts with numerous small warts of different sizes ; in the males these form two longitudinal rows on each side, one running near the top of the back, the other along the flank, which a fold of skin divides from the belly. In the breeding season the males on several parts acquire a roughness of the skin, to render more secure their hold on the back of the females ; this may be observed on the

breast, under the fore-legs, and on the first and second toes of the fore-feet.

Length of the body, about $1\frac{1}{2}$ inch.

The ground colour of the upper parts is tawny mixed with ash, agreeably spotted with light green; below, white or flesh-colour, often with orange specks on the sides. The rough places described above in the males are during life of a bright violet tint, but become almost black when the animal is dead, the green of the upper parts also turning in like manner.

Frequents pools and other pieces of water in the spring and summer; in the autumn is found in shrubby places.

Hitherto this species has not been met with out of France, in which country it has been observed by M. Baillon in Picardy; by M. Duméril at Sceaux-Penthievre, near Paris; in the Department du Gard, not uncommonly, by M. Crespon, in vineyards; and is a native of the neighbourhood of Montpellier and other parts of the South. Prince Buonaparte thinks that it is to be found on the Italian side of the Var.

Genus **ALYTES**.

Tongue round, thick, entire, adhering on all sides, furrowed lengthwise; palatine teeth in a long transverse row behind the nostrils, interrupted in the middle; tympanum distinct; eustachian tubes very small; fore-toes free; hind-toes webbed by a thick membrane; no vocal bladder. Only one species.

Alytes obstetricans.

Alytes obstetricans, DUM. et BIB. vol. viii. p. 467; SCHINZ, Europ. Faun. vol. ii. p. 76; BUON. Faun. Ital. (figured).

DESCRIPTION.—The head is depressed, with its sides nearly vertical, flat behind and between the eyes, which are pro-

minent; muzzle very convex; mouth forming a semicircle, following the outline of the jaws; nostrils terminal, as far apart as the eyes; the fore-legs, when placed along the body, extend to the origin of the thighs; the hind-legs reach beyond the nose by the length of their fourth toe; above the ear is an oblong gland pierced by very minute pores; below the throat is a fold of skin of unusual development; all the upper parts are sprinkled with very small warts, and the lower regions with still smaller ones.

Length of the body, under $1\frac{1}{2}$ inch.

Upper parts sometimes inclining to grey, sometimes olive, feebly and irregularly spotted with brown, red-brown, or brick-coloured marks of small size; beneath white, finely speckled with black on the throat, the sides of the abdomen, and under each of the legs.

The female produces in March from fifty to sixty eggs, about as large as a grain of millet, joined together in a sort of chain by the glutinous substance with which they are surrounded. While these eggs are leaving the body of the female, the male, who is always in attendance, places them around his thighs, to which they adhere, and where they remain until the young tadpole is ready to come forth; this interval is spent in a hole two or three feet under ground. As the moment for the bursting of the eggs approaches, the animal takes to the water, which assists him to get rid of his burden. This curious species is further remarkable for its shrill croak or note, which is compared to the sound of a glass bell.

It inhabits most of the temperate parts of Europe, preferring the central to the southern countries. Is very common in France, especially near Paris. Occurs in Picardy. M. Crespon records it as not rare in the Department du Gard. Very rare in Belgium. Inhabits Switzerland, the Rhine districts, and other parts of Germany, Podolia, and

the Bukovina. Is unknown in Southern and Central Italy, but is supposed to occur in the North.

Genus **PELOBATES.**

Head protected by a bony shield, covered with small asperities ; tongue circular, free, and slightly notched on its posterior margin ; palatal teeth in a transverse row, interrupted in the centre for a considerable space, placed on a line with the anterior edge of the nostrils ; ears quite invisible on the outside ; the fore-feet with four toes, and no rudiment of a fifth ; hind-feet strongly webbed throughout, almost to the extremities of the toes, and each with a horny tubercle beneath the fifth toe, forming a sort of spur ; no vocal bladder ; on the upper surface of the fore-leg in the male is a large oval gland, pierced by a number of small holes ; no glandular line along the sides of the back, and no parotid glands. Only two species.

Pelobates fuscus.

Pelobates fuscus, DUM. et BIB. vol. viii. p. 477 ; BUON. Faun. Ital. (figured).

Bufo fuscus, SCHINZ, Europ. Faun. vol. ii. p. 75.

DESCRIPTION.—Head shorter by one-fourth than the width of its hinder portion ; rough only on the forehead and crown ; muzzle short, obtuse, rounded at its extremity ; the centre of the head, from between the eyes to the crown, swollen into a large longitudinal protuberance ; on some of the other parts of the head the skin is thin and tight, so that the granulations on the bone can be distinctly felt through it ; the fore-legs are as long as the body, the hind-legs twice that length ; the length of the spur equals the space between the eyes ; palatine teeth ten in number, five on each side, with a blank space in the middle ; skin of the

back with or without tubercles; upper eyelid wrinkled or smooth.

Length of the body, about $2\frac{1}{4}$ inches.

Upper surface grey or reddish, with or without dark marblings; a yellow streak runs along the back; the flanks, shoulders, and upper part of the thighs often speckled with red; lower parts white, or else with black spots, or flexuous black lines; the spur yellowish or brown, never black, as in the next species.

Its croak resembles that of the *R. viridis* or *esculenta*. If the thigh be pressed, the frog utters a cry, and gives out an odour of garlic, sometimes so strong and pungent as to affect the eyes. Lays long chains of eggs in March and April, held together by a glutinous matter; the tadpoles remain long in the water as such, their growth being slower than that of most frogs.

It is found in France near Paris, in ponds between Pontin and Bondy; in Alsace, and other places in the north of that country. In Belgium, it has occurred at Antwerp near Fort Carnot. Occurs, but not commonly, in Galicia, the Bukovina, Silesia, and Carniola, and probably in the North of Italy.

Pelobates cultripes.

Pelobates cultripes, DUM. et BIB. vol. viii. p. 483; CRESPO, Faun. Mérid. vol. ii.

Cultripes provincialis, SCHINZ, Europ. Faun. vol. ii. p. 70.

DESCRIPTION.—Differs from the preceding in having the whole of the upper part and sides of the head rough, except the top of the nose and the eyelids, and in the flatness of the top of the head; the spurs are rather more robust, and always of a deep black colour, never brown or yellow.

Length of the body, about $2\frac{1}{2}$ inches.

The upper parts are marked with large brown spots, either separate or compact, on a greyish ground ; on the sides the spots are of the same colour, but smaller ; under parts white ; the spur and tips of the toes black.

Appears to have been observed only in Spain and the South of France. Said by M. Crespon to be rare in the Department du Gard.

Genus **BOMBINATOR.**

Tongue circular, entire, very slender, spongy, and adhering to the bottom of the mouth ; palate with a small interrupted row of teeth between the posterior edge of the inner nostrils ; no outward appearance of a tympanum ; fore-legs with four short unequal toes, with a rudiment of a fifth. Only one species.

Bombinator igneus.

Bombinator igneus, DUM. et BIB. vol. viii. p. 487 ; SCHINZ, Europ. Faun. vol. ii. p. 77 ; BUON. Faun. Ital. (figured).
Bombinator pachypus, BUON. Faun. Ital. (figured).

DESCRIPTION.—In shape, less compact than the Toads, but not as slim as the true Frogs ; body and head depressed ; muzzle much rounded, eyes projecting ; nostrils placed far apart, and at the spot where the upper jaw turns downwards to the lower ; the forehead and crown flat ; all the upper surface of the body covered with warts of different sizes, and sometimes with minute spines ; the fore-legs, stretched along the body, reach to the origin of the hind-legs ; these last will extend beyond the mouth by the length of their toes ; the third toe of the fore-foot is the longest, then the second, and the first is the shortest ; the webs of the hind-feet reach almost to the ends of the toes.

In Italy, in the mountains especially, the feet are much thicker than elsewhere, so as to have a swollen appearance ; it is upon this fact that Prince Buonaparte is inclined to look upon the Italian animal as specifically distinct, under the name of *B. pachypus*.

Length of the body scarcely more than 1 inch.

The under surface is sometimes smooth, sometimes with a few small glandular warts. The colour of the upper parts is a dull olive-brown, sometimes paler ; there are small black spots on the edge of the upper jaw and along the toes ; all the lower parts are a fine orange or rose-colour, marbled, or spotted with blue or bluish black.

It passes most of its time in the water ; spawns in May and June ; prefers ditches and ponds where the water is brackish ; when frightened, and unable to escape, it raises its legs towards its head, throwing the latter back in a ridiculous manner, and squirting from the vent a frothy, acrid fluid.

Found nearly all over the temperate regions of Europe ; all over France, Germany, Switzerland, and Russia. In Italy, chiefly in the Apennines, never in the plains. Is very common in pools among the wooded hills and heaths of the Ardennes ; also in Silesia. Not rare in Gallicia, the Bukovina, and Carniola.

Genus **HYLA**.

Readily distinguished from the rest of the European *Ranidæ* by the enlargement of the extremities of the toes, which are provided each with a disk or cushion, enabling the animal to adhere to leaves of trees and other smooth substances. The abdomen is covered with numerous small tubercles. There is in the males of nearly all the species a vocal bladder under the throat, or on each side of the

neck ; tongue entire, or very slightly notched, nearly circular. Thirty-two species known, of which the following only is European.

Hyla viridis.

Hyla viridis, DUM. et BIB. vol. viii. p. 581 ; BUON. Faun. Ital. (figured).

Hyla arborea, SCHINZ, Europ. Faun. vol. ii. p. 71.

Common Tree Frog.

DESCRIPTION.—Head short, thick, the sides of the muzzle approaching each other at an obtuse angle ; palatal teeth in a short interrupted row between the hinder edges of the inner nostrils ; on each side of the palate is a shallow longitudinal furrow. The males possess the power of inflating the bladder beneath their throat until it becomes as large as their head ; the fore-legs are as long as the body ; the hind-legs reach beyond the nose by the length of the foot ; the toes of the fore-feet are fringed by a membrane ; the hind-feet are deeply webbed between the third and fourth, and fourth and fifth toes, but slightly between the others ; the skin is folded above the tympanum and across the breast ; on the upper surface it is smooth.

Length of the body, about $1\frac{1}{2}$ inch.

The general colour is light green above, with a rosy tinge on the toes, beneath white ; sometimes the green is spotted with tawny or black, sometimes it is replaced by a blue shade, or by a uniform brown or dirty white, or violet, with darker markings ; a black line edged with white runs from behind the eye to the thighs along the sides.

This species feeds on insects, upon which it darts sometimes from the distance of a foot. Except in the spawning season, from April to June, it chiefly lives upon trees ; during that period it takes to the water. Its croak, when

there are many together, may be heard for two miles or more around.

It inhabits nearly the whole of Europe, except the British Islands. Is common in France, Germany, Italy and its islands; Poland, Switzerland, and all the East of Europe. Not uncommon in the South of Russia, the Crimea, and Caucasus. In Belgium it is but rarely found.

Genus **BUFO**.

The body has a swollen appearance, the skin is warty; a porous protuberance behind the ear; there are no teeth in the jaws, and the hind-feet are of moderate length.

Bufo vulgaris.

Bufo vulgaris, DUM. et BIB. vol. viii. p. 671; SCHINZ, Europ. Faun. vol. ii. p. 72; BUON. Faun. Ital. (figured); BELL, Hist. Brit. Rep.

The Toad.

DESCRIPTION.—The body is broad, thick, very much swollen; the head large, with the crown much flattened; muzzle obtuse and rounded; gape very wide; no teeth either on the jaws or the palate; the tongue entire, not notched; over each eye a slight porous protuberance, a larger one on each side behind the ears; on the fore-feet the third toe is the longest; the first and second are equal, and longer than the fourth; the hind-legs scarcely longer than the body, with five toes, and the rudiment of a sixth, webbed for half their length, the fourth much the longest, the third a little longer than the fifth; the skin both above and below is covered with warts and pimples of various sizes; these are largest on the back, but more crowded on the belly; tympanum more or less visible in different individuals.

Length of the body about $3\frac{1}{4}$ inches, but often very much larger in the Morea and Sicily. Specimens from the former country are said to measure 10 inches.

The general colour is a brownish grey, the tubercles being reddish brown; sometimes the upper parts incline to olive or black; the under parts are yellowish white, either plain, or irregularly spotted with black; a brown or black band is always present along the outer margin of the parotid protuberances. Specimens brought from Japan differ from those of Europe only in being a good deal darker.

The Toad crawls or runs, but does not leap like the Frog; frequents moist places, but may often be met with on dusty roads. Spawns in the water in April or the end of March, the eggs forming long chains. The Tadpoles are smaller and blacker than those of the Frog. It changes its entire skin periodically. The glands on the back and sides secrete a fœtid acrid matter. Feeds on insects, slugs, and earth-worms.

Is found commonly all over Europe, from Sweden and Russia, to Greece and Italy. In England and Scotland, but not in Ireland.

Bufo viridis.

Bufo viridis, DUM. et BIB. vol. viii. p. 681; BUON. Faun. Ital. (figured).

Bufo variabilis, SCHINZ, Europ. Faun. vol. ii. p. 74.

Bufo calamita, BUON. Faun. Ital. (figured); BELL, Hist. Brit. Rep. The Natter-Jack Toad.

DESCRIPTION.—The general form is similar to the Common Toad, but the body is less swollen; the eyes are more projecting, with the eyelids very much elevated above the crown; the porous protuberance behind the ears not nearly so large as in the last species; the toes on the fore-feet are more nearly equal; the third, however, is still a little

longer than the others, the first and second not shorter than the fourth; hind-legs not as long as the body, their toes much less webbed than in *B. vulgaris*; the tubercle there representing the sixth toe either absent, or very small; the skin covered with warts and pimples; on each hind-leg is a large gland; the male is provided with a vocal bladder, but it is altogether internal; the warts of the body vary much in size and number in different individuals; in some the upper surface is almost free from them.

Length of the body, $2\frac{3}{4}$ inches.

From the variations in colour which occur, some Naturalists suppose that two distinct species exist, but the authors of the 'Erpétologie Générale' have decided that the *B. calamita* and *B. viridis* are specifically the same. The prevailing tint of the upper parts is dirty green, with a mixture of brown, olive, tawny, or yellowish. In many individuals, more particularly those found in England, and the North, East, and West of France, a bright yellow line runs down the middle of the back; the warts and pimples are often reddish; parts beneath whitish, often spotted with black; legs marked with transverse black bands.

Frequents dry situations as well as moist, and resorts to the water for the spawning and breeding season; when excited, emits from the skin a strong sulphury odour. Its croak is like that of the Tree Frog (*Hyla viridis*).

Found over nearly the whole of Europe, the West of Asia, and North of Africa. In England, on heaths near London, and in some other parts of the country. Occurs in a few localities in the South-west of Ireland. Common in many parts of Germany, Poland, South of France, the plains of Switzerland, and Southern Russia. Is not often met with in Belgium, but is abundant in Italy;

and in Sardinia is said to be the only species known. Was observed by the French Expedition to the Morea near Modon.

Family SALAMANDRIDÆ. SALAMANDERS AND NEWTS.

Gills present only in the Tadpole state ; body elongated ; legs four in number ; fore-feet with four toes ; hind-feet generally with five ; tail present in the adult as well as in the Tadpole.

Genus **SALAMANDRA.**

The tongue almost circular, but slightly oval, free at its edges ; palatal teeth more or less hooked, placed in two longitudinal rows ; generally with glandular swellings on each side of the head ; four toes on the fore-feet, five on the hinder ; tail rounded, conical.

Salamandra maculosa.

Salamandra maculosa, DUM. et BIB. vol. ix. p. 52 ; SCHINZ, Europ. Faun. vol. ii. p. 58 ; BUON. Faun. Ital. (figured).

DESCRIPTION.—Body black, with large yellow marks irregularly disposed on the head, back, and sides, as well as on the legs and tail ; these marks vary much in size, number, and brightness of colour ; the outline of the snout is much rounded ; nostrils near the tip, and very small ; the skin in general is warty ; along the centre of the back runs a shallow furrow, in which each vertebra may be distinguished ; on each side of the back are pores in pairs, and placed with some regularity ; along each flank is a row of twelve porous warts ; the warts on the body are also porous, and emit, when the animal is pressed by the hand,

or apprehensive of danger, a white viscous fluid, in some degree poisonous. On the throat, in most instances, there is a rough fold of skin forming a kind of collar, running back on each side to the glandular swellings on the head, which are always, or nearly so, yellow, and much developed; eyelids very moveable; the feet are short and feeble; tail not quite as long as the body; the belly is black.

Entire length, about 6 inches. The females in general are larger than the males.

The Salamander produces its young alive, betaking itself for that purpose to the water, but at other times is altogether terrestrial in its habits, preferring, however, situations where it can imbibe moisture through its numerous pores. The breeding season is from March to June. Feeds on insects, slugs, and earth-worms. The belief formerly prevalent that the Salamander was able to resist the action of fire is quite unfounded.

Inhabits the greater part of Central and Southern Europe. In France, has been found near Paris, in old aqueducts at Plessis-Piquet; is very abundant near Rouen, and at Vannes in Brittany. In the Southern Departments is confined to the more elevated districts. Is common throughout the whole range of the Carpathian mountains, and in mountain regions in Italy, Switzerland, Spain, Turkey, Hungary, and Bohemia; very common near Vienna, but not abundant in Silesia. In Belgium occurs in caverns, especially on the right bank of the Meuse.

Salamandra Corsica.

Salamandra Corsica, DUM. et BIB. vol. ix. p. 61; BUON. Faun. Ital. (figured).

DESCRIPTION.—Closely resembles the last species, but must be regarded as specifically distinct, on account of the dif-

ferent arrangement of its palatal teeth. Those in the *S. maculosa* are in two curved rows, enclosing an oval concave space, with their hinder ends turned outwards ; while in the species before us the rows of teeth are parallel for more than two-thirds of their length, separating a little towards the front, where they have a rounded space between them, and turning abruptly across the palate at their hinder ends.

Entire length, about 7 inches.

Has been observed only in the Island of Sardinia and in Algeria.

Salamandra atra.

Salamandra atra, DUM. et BIB. vol. ix. p. 62 ; SCHINZ, Europ. Faun. vol. ii. p. 57 ; BUON. Faun. Ital. (figured).

DESCRIPTION.—Body black all over, without any spots ; the glandular swellings on the sides of the head much developed ; along the sides are twelve or thirteen oval porous warts, with a transverse impression between each pair ; the tail marked with about twenty-seven transverse folds ; a distinct fold under the throat, forming a collar, and dividing the head from the body. In form and appearance, except as to colour, identical with *S. maculosa*.

This species inhabits the higher mountain ranges of Switzerland, Savoy, Tyrol, the neighbourhood of Salzburg, Carniola, and the Bukovina ; is found up to the height where perpetual snow begins, and never on the plains ; has not been met with in the Italian Peninsula, but doubtless occurs on the northern frontier of that country ; is common in suitable situations in Austria, Carinthia, and Carniola.

Genus **SALAMANDRINA.**

Tongue oblong, entire, rounded in front, widened and squared behind ; the hinder portion free ; palatal teeth in

two longitudinal lines ; no projecting parotid glands ; four toes on the fore- and hind-feet. Only one species known.

Salamandrina perspicillata.

Salamandrina perspicillata, DUM. et BIB. vol. ix. p. 69 ; BUON. Faun. Ital. (figured).

Salamandra perspicillata, SCHINZ, Europ. Faun. vol. ii. p. 59.

DESCRIPTION.—Body very long for its width ; head distinct from the trunk ; all the feet with four toes each ; palatal teeth in two ranges, which are parallel at first, and then divergent, forming the letter Y ; tail long and rounded, with a slight ridge along the top. The whole of the upper parts are black, with the exception of a curved orange mark, shaped like a horseshoe, on the head, with the convex side towards the back of the animal, and the extremities, which are widened, towards the eyes ; the belly is dull white, with black spots ; the under part of the tail and the soles of the feet are blood-red. No dimensions given.

Inhabits all the Tuscan Apennines, and probably the whole of that range of mountains ; found by Prince Buonaparte near Ascoli, and on the shores of the Lago di Albano, and has been taken on Vesuvius. M. Savi obtained specimens from Sardinia.

Genus **PLEURODELES.**

Tongue small, warty, free behind and on the sides, adhering in front ; palatine teeth in two longitudinal rows, nearly parallel, and nowhere divergent ; the extremities of the ribs piercing the skin, and visible on the surface ; tail long, compressed. Only one species.

Pleurodeles Waltli.

Pleurodeles Watlii, DUM. et BIB. vol. ix. p. 72; SCHINZ, Europ. Faun. vol. ii. p. 64; BUON. Faun. Ital. (figured only).

DESCRIPTION.—The body much resembles that of the genus *Triton* in general appearance; the ribs, in from ten to fourteen pairs, are directed backwards, and their extremities protrude through the skin in a very remarkable manner, having the appearance of small bony spines; the eyes are prominent, with very distinct eyelids; the skin is somewhat granular on almost every part except the belly, very smooth on the edges of the jaws; a fold under the neck and behind the gape; all the toes are free to their roots; the general colour above is brown, or blackish grey, with yellowish marblings; the belly covered with numerous small black spots, with some yellow spots interspersed. No dimensions given. The habits of this species are as yet unknown.

First discovered by M. Waltl at Chiclana in Spain, and probably confined to the more southern parts of that country and of Portugal. Schinz states that it is very common in Andalusia, in tanks and cisterns of water.

N.B.—The *Bradybates ventricosus* of Tschudi is probably the young of the *Pleurodeles*.

Genus GEOTRITON.

Tongue a disk, free all round, supported in the centre by a thin protractile stem received into a cavity in the bottom of the mouth; palatine teeth in one row, across the roof, behind the internal orifices of the nostrils; behind these are two other rows of teeth; eyes prominent; no apparent parotid glands; all the toes somewhat webbed at the base; skin smooth. Only one species.

Geotriton fuscus.

Geotriton fuscus, DUM. et BIB. vol. ix. p. 112; BUON. Faun. Ital. (figured).

Triton fuscus, SCHINZ, Europ. Faun. vol. ii. p. 62.

DESCRIPTION.—Tail rather shorter than the body, thick, and rounded at the base, ending in a sharp point; toes of the fore-feet short, depressed, with small webs between them, those of the hind-feet webbed to half their length; the legs are all of the same length, and the space between the fore- and hind-legs equals one-third of the length of the body. Colour of the upper parts brown, marked with obscure reddish spots; beneath ashy, with white specks; the legs are paler than the body; head convex above, very flat beneath, somewhat wider than the body; the space between the tip of the snout and the anterior margin of the eye equal to one and one-half the diameter of the eye; the body is nearly cylindrical, rather flat on the belly, narrowing towards the neck, and conical near the tail.

Entire length, $3\frac{3}{4}$ inches.

This animal, of whose habits but little appears to be known, is said to take to the water but rarely, probably only in the breeding season. It has been found in Italy in caves, and under stones, in the mountains of the Genoese territory, near Serravezza, and, according to Prince Buona-parte, in several parts of the Apennines, especially near Ascoli and Sambuca, as well as in the Island of Sardinia.

Genus TRITON.

Tongue fleshy, warty, rounded or oval, free at the edges only, or at the edges and on the posterior margin; palatine teeth in two longitudinal and almost parallel rows; numerous small teeth in the jaws; without very prominent parotids; head smaller than the middle of the belly; tail compressed, furnished with vertical membranes like fins

during the period when the animals keep in the water, especially in the breeding season.

Triton cristatus.

Triton cristatus, DUM. et BIB. vol. ix. p. 131 ; SCHINZ, Europ. Faun. vol. ii. p. 59 ; BUON. Faun. Ital. (figured) ; BELL, Hist. Brit. Rep.

The Warty Newt.

DESCRIPTION.—Head depressed ; snout obtuse and rounded ; gape extending a little beyond the eyes ; a collar beneath the neck, formed by a loose fold of the skin ; fore-feet extending a little beyond the snout ; hind-feet placed along the side, reaching to the base of the toes of the fore-feet ; tail very much compressed, its edges sharp above and below, lanceolate, gradually tapering to a blunt point ; skin warty, uniformly covered with scattered pores ; a row of pores on each side of the head, and also along each side of the body, forming a line between the fore- and hind-legs ; in the male the abdomen is rather shorter, compared with the entire length, than in the female ; the back, in spring, has a high membranous crest, running from between the eyes to near the tail, which last has also a crest like the dorsal ; both are serrated and jagged, the latter the most so. The upper parts are blackish brown, with round spots of a darker tint ; breast and belly bright orange, or orange-yellow, with conspicuous round black spots, sometimes confluent, and forming interrupted transverse bands ; sides dotted with white ; often a silvery white band along the sides of the tail ; the membranes are dusky, tinged with violet. Remains almost continually in the water.

Entire length, 5 or 6 inches.

This is probably the most common European species ; is found all over the Continent, from Italy to Sweden ; in England is less frequent than *T. punctatus* ; very common

all through Italy and Switzerland, in Gallicia and the Bukovina; not uncommon in the South of France, Belgium, and Carniola.

Triton marmoratus.

Triton marmoratus, DUM. et BIB. vol. ix. p. 135; SCHINZ, Europ. Faun. vol. ii. p. 60; BUON. Faun. Ital. (figured). (Vide article *T. Alpestris* of that work.)

DESCRIPTION.—The body is more or less covered with wrinkles and warts, and is rather thick and short; the male in spring is adorned by a very ample crest, running along the back and tail; its colour at that season is dark green, marbled with black angular spots, sometimes confluent, and placed without regularity; very often the crest is black, with a number of equidistant white spots; in the female the green is less bright, and the marblings have a red-brown tinge; the crest is absent, and along the back runs a line of yellow, more or less clear; the body beneath is black, with scattered white specks; the centre of the flat portion of the tail is milky-white; in the female the tail beneath is pale yellow or orange; upper lip straight, not drooping over the jaw as in *T. cristatus*; at other seasons of the year the colours become much less bright, and the crest of the male disappears.

Entire length, 6 or 7 inches.

A variety has been occasionally met with, once in the cellars of the Museum of the Jardin des Plantes in Paris, with a bright vermilion line along the back and tail; all the under parts of the body vinous brown, with numerous white specks.

The *T. Carnifex* and *T. Nycthemerus* of authors are probably merely further varieties of this very changeable species, depending upon the age or sex of the individual, or upon the situation in which it lives. The former appears

to approach nearly to the brightly-coloured variety just described, and is said by Prince Buonaparte to occur in Italy, near Rome, Ostia, Castel-Fusano, in the Bolognese territory, and Pisa ; also in Spain, France, Germany, and Switzerland.

T. marmoratus inhabits many of the warmer parts of Europe, such as Spain and France, more particularly the Southern Departments ; it has, however, been found near Paris, and in Switzerland, near Berne. Is very common about Bordeaux.

Triton Pyrenæus.

Triton Pyrenæus, DUM. et BIB. vol. ix. p. 139.

DESCRIPTION.—Body covered with warts and pointed tubercles ; these latter are generally distinct from each other, but over the eyes are crowded together and smaller than elsewhere ; on the sides the skin contracts into transverse folds, and the warts on those parts are, as it were, cut into facets and arranged in lines ; all along the back and tail is a line, which, in spirits, is dull yellow, but in the living animal is doubtless much brighter ; upon its surface are several projecting black spots, and its borders are irregularly notched with the brown which pervades the sides ; the eyes very prominent ; the tail much compressed ; all the under parts and the tips of the fore-toes are reddish yellow, these last being covered with large tubercles ; the lower half of the tail is also reddish yellow : the unusually rough and rugged skin makes this small species very remarkable.

The length, as given in the ‘*Erpétologie Générale*,’ from a specimen in spirits, is 9 centimetres, equal to about $3\frac{1}{2}$ English inches. The author of that work supposes the *T. cinereus* of Tschudi, *T. Bibroni* of Bell, as well as the *T. rugosus* and *T. repandus* of Dugès, to be merely varieties of the present species.

It appears to be of very rare occurrence, having been found but a few times, and only in the Pyrenees.

Triton punctatus.

Triton punctatus, DUM. et BIB. vol. ix. p. 141; BUON. Faun. Ital. (figured).

Triton palmatus, SCHINZ, Europ. Faun. vol. ii. p. 61.

Lissotriton punctatus, BELL, Hist. Brit. Rep.

Common Smooth Newt.

DESCRIPTION.—The whole of the skin is quite smooth, without any tubercles; on the top of the head are two rows of pores; occasionally there are a few distant pores on the sides, forming an indistinct lateral line; the collar beneath the throat very inconspicuous; the male in the breeding season furnished with a crest, which runs continuously from the top of the head along the tail, and is regularly festooned on its edge. Upper parts light brownish grey inclining to olive; beneath yellowish, becoming bright orange in spring, marked all over with round, black, unequal spots; on the head the spots form about five longitudinal streaks; under the eyes is a yellowish streak; the female is much less spotted than the male, the spots being smaller and often very obscure, and the under parts are often quite plain. Passes a great deal of its time on land, when the skin loses its softness and sometimes becomes wrinkled; the toes, from being flat, become round; the membranes of the back and tail entirely disappear, and all the colours become more dull.

Entire length, from $3\frac{1}{2}$ to 4 inches.

Is found over a large part of Europe, and is the most plentiful species in the British Islands. Is very common in Switzerland, Belgium, Galicia, and the Bukovina. "Uncommonly numerous in Silesia," and very abundant in Italy, especially near Rome. Inhabits many parts of France, and is found in Carniola.

Triton alpestris.

Triton alpestris, DUM. et BIB. vol. ix. p. 146; BUON. Faun. Ital. (figured).

Tritone Apuano, BUON. Faun. Ital. (figured).

Triton Wurfbainii, SCHINZ, Europ. Faun. vol. ii. p. 60.

DESCRIPTION.—The body above nearly black; the throat, belly, and edges of the vent reddish yellow; the lower half of the tail is brighter yellow, with regular brown spots; all their under parts are quite smooth, but the upper parts are somewhat rugged; on the sides, where the colours of the back and belly join, are rows of numerous black specks; the tail is wide, compressed, almost transparent, especially on its lower part, which is spotted with black; the fore-feet are pale beneath, and, as well as the hind-feet, have the toes ringed with black. The best figure of this species is that in Prince Buonaparte's 'Iconografia della Fauna Italica,' with the name of *Tritone Apuano*, as coming from Genoa.

Length, about $4\frac{1}{2}$ inches.

Often found in company with *T. cristatus*. Very common in Switzerland, particularly near Zurich. Universally distributed in Belgium, where it abounds in the Ardennes and near Coudroy. Common in Austria. In Italy, inhabits mountains near Terracina and Garfagnana. Not rare in the South of France. Is included in lists of the Reptiles of Gallicia and the Bukovina, the Carpathian Mountains, and Carniola.

Triton palmatus.

Triton palmatus, DUM. et BIB. vol. ix. p. 148.

Triton exiguus, SCHINZ, Europ. Faun. vol. ii. p. 62; BUON. Faun. Ital. (figured).

Lissotriton palmipes, BELL, Hist. Brit. Rep.?

DESCRIPTION.—The skin is nearly smooth, the body angular, the back flat, with a prominent line along each side,

originating on the muzzle and reaching to the hind-legs, as in some Frogs. In the spring the hind-toes of the male are palmated nearly to their extremities, and the tail is lanceolate, with thin edges above and below, ending in a thread-like point. In the female this part is nearly round at all seasons, and becomes so in the male after the breeding is over. The colour of the upper parts of the body in that sex is olive-brown or greenish with dark spots; on the side of the tail is a wide band of yellowish white edged with round black specks; the belly is yellow, with a few scattered dark specks. The general colour of the female is lighter and less bright.

Entire length, $2\frac{1}{2}$ inches.

The sexes differ so much in the spring as to have led to the supposition that they were of distinct species, and the female has been described as *T. abdominalis*. When squeezed, emits a disagreeable musky odour.

Said to be the most common Newt around Paris. Occurs in many parts of Germany, near Vienna and elsewhere. Is common in the South of France, but rare in Switzerland. In Italy, has been found near Rome with *T. Carnifex*, and about Pisa. If it is the *T. palmipes* of Bell, it is rare, and local in England, and possibly is the variety mentioned by W. Thompson as occurring in parts of the West of Ireland.

Triton Rusconii.

Euproctus Rusconii, DUM. et BIB. vol. ix. p. 158; SCHINZ, Europ. Faun. vol. ii. p. 65; BUON. Faun. Ital. (figured).

DESCRIPTION.—This species has been separated from the genus *Triton* by several authors, chiefly because its tongue is free behind as well as on its edges, instead of on these only. M. Dumeril, however, does not attach much value to this distinction. The head, according to Prince Buonaparte, is as long as half the body, rounded in front, de-

pressed ; eyes small, not prominent, contained twice in the space between them and the tip of the snout ; tongue wide, filling the whole mouth, closely adherent in front ; a shallow furrow runs down the back ; no dorsal crest ; tail longer than the body, rounded at its base, then compressed, with sharp edges above and below ; the fore-feet do not reach to the tip of the snout ; their inner and outer toes are the shortest, the third a little longer than the second ; the hind-feet, placed along the body, reach half-way along the sides ; their thumb is the shortest toe, the centre one the longest, the others about equal, all rounded, short, and quite free. In both sexes the anal region is much swollen and enlarged into a conical projection, thinner in the male than in the female. Upper parts dark olive, often inclining to dusky or black, with indistinct rusty spots ; beneath reddish ash, with black spots, sometimes confluent, sometimes few in number and widely separated. The female is rather larger than the male, and may be recognized by an enlargement or fold at the back of the hind-leg, near the foot, forming a projecting heel.

Entire length, 5 or 6 inches.

Peculiar to hilly districts, in the neighbourhood of stagnant water, in which it lives during the summer.

Is not uncommon in Sardinia and Corsica, especially in the latter. In Sardinia it is more abundant in the north than in the south of the island. Has been found, though rarely, in the Pyrenees and in Spain.

Family SIRENIDÆ.

Gills permanent, continuing during the whole of the life of the animal ; lungs acquired in addition when adult ; legs feebly developed, sometimes only one pair present ; body very much elongated.

Genus **PROTEUS.**

Body long, slender, rounded, without warts or tubercles, the sides slightly furrowed transversely; head prolonged, depressed in front; snout truncated; eyes not visible; nostrils apparent on the outside, but not communicating with the interior of the mouth; teeth in both jaws, and two long rows on the palate; body almost twice as long as the tail, which is compressed, very thin near the extremity, its edges consisting of a membrane; legs slender, four in number; fore- and hind-legs very far apart, the former with four toes, the latter with only two, and these merely rudimentary. Only one species known.

Proteus anguinus.

Proteus anguinus, DUM. et BIB. vol. ix. p. 186.

Hypochton anguinus, SCHINZ, Europ. Faun. vol. ii. p. 57.

Der Olm, Germany.

DESCRIPTION.—This singular animal is described as resembling an Eel with legs, so much is its body elongated; the muzzle is long and depressed, both jaws are furnished with teeth; the tongue is free in front; the eyes extremely small, and covered by the skin, through which they are with difficulty discerned as round black spots; the powers of sight must be very feeble, if they exist at all. Besides the internal lungs, there are three feathered gills on each side of the posterior portion of the head of a bright red, when the animal has been for some time in the dark. The skin is smooth, either whitish or flesh-coloured.

Entire length, from 10 inches to 1 foot. The diameter seldom exceeds 1 inch.

Lives altogether in water, but comes to the surface from time to time to breathe. Those kept by M. Dumeril for three or four years, were fed entirely upon earth-

worms. When taken from the water and placed on the ground, they drag themselves along with difficulty, the feet being too weak to raise the long body from the surface, and they soon die unless restored to their favourite element. A healthy specimen was exhibited in the Aquarium of the Zoological Society of London, in May 1858.

Found in Lake Sittich in the Duchy of Carniola, and in caverns communicating with it. Also in the celebrated Grotto of Adelsberg in Carinthia, on the road from Vienna to Trieste.

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| — Rudiments of Botany | 6 | Wollaston's Insecta Maderæ | 5 |
| — Translation of Mohl. | 5 | — on Variation of Species | 10 |
| — Vegetation of Europe | 5 | Woodward on Polarized Light | 9 |
| — & Griffith's Micrographic Dict. | 9 | Yarrell's British Birds | 1 |
| Hewitson's Birds' Eggs | 1 | — British Fishes | 2 |
| — Exotic Butterflies | 5 | — on the Salmon | 2 |
| Ibbetson's Geology of Isle of Wight. | 12 | | |



